VHF FM TRANSCEIVER

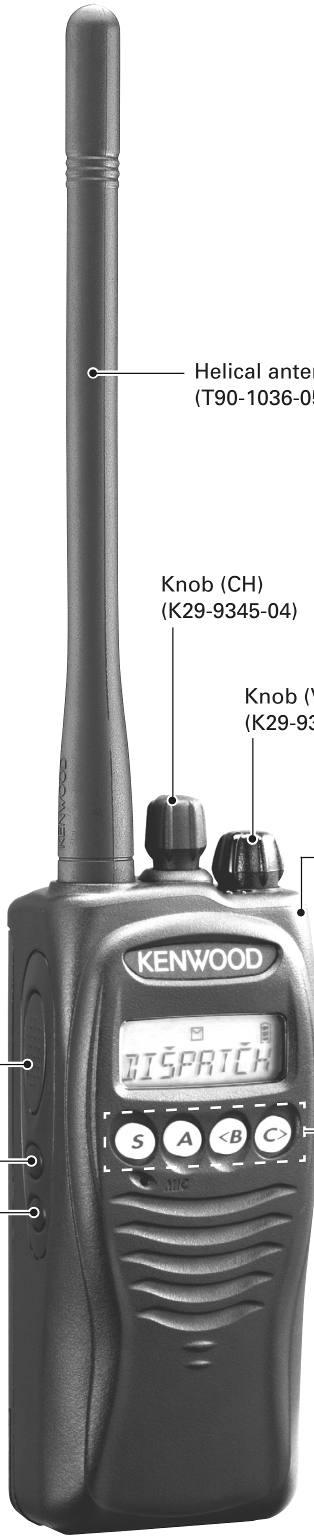
TK-2212L

SERVICE MANUAL

KENWOOD

Kenwood Corporation

B51-8785-00 (S) 508



Refer to the TK-2212/2217 service manual (B51-8715-00) for any information which has not been covered in this TK-2212L service manual.

CONTENTS

This product uses Lead Free solder.

GENERAL / SYSTEM SET-UP

DOCUMENT COPYRIGHTS

DISCLAIMER

While every precaution has been taken in the preparation of this manual, Kenwood assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. Kenwood reserves the right to make changes to any products herein at any time for improvement purposes.

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of the publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts, components, kits, or chassis. If the part number is not known, include the chassis or kit number of which it is a part, and a sufficient description of the required component for proper identification.

PERSONAL SAFETY

The following precautions are recommended for personal safety:

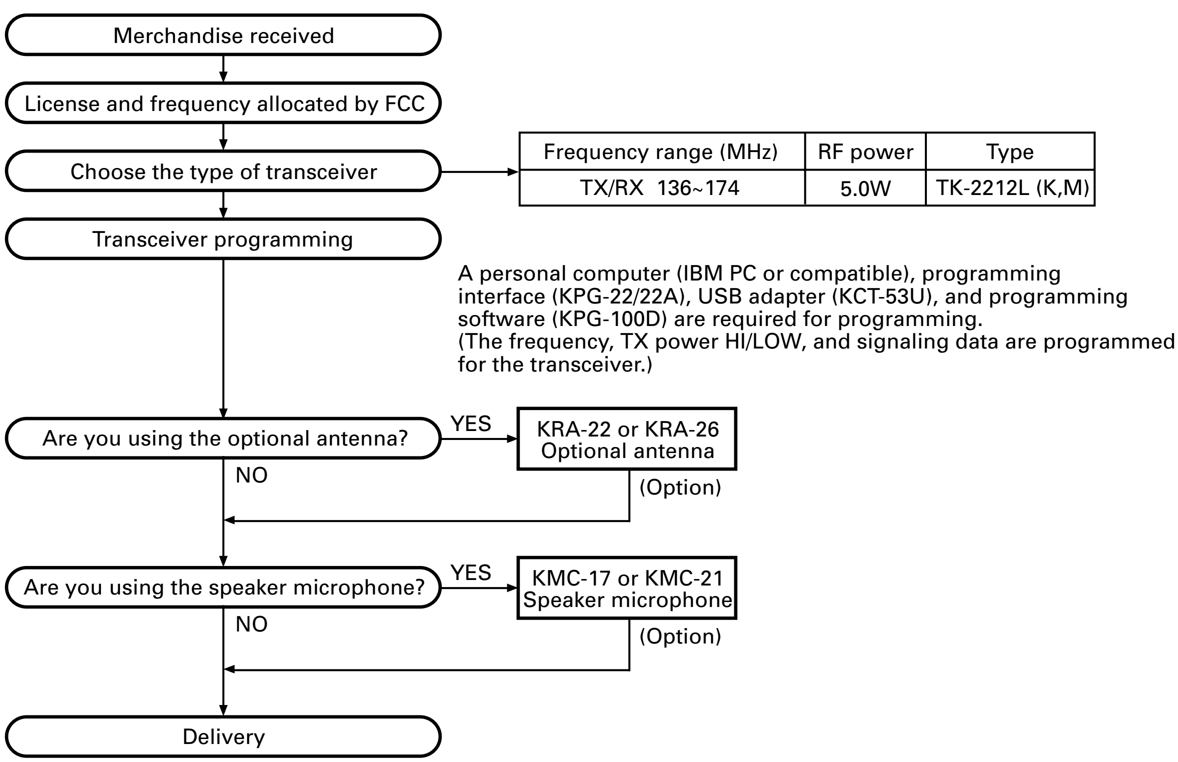
- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- This equipment should be serviced by a qualified technician only.

SERVICE

This transceiver is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained within.

Model & destination (Unit)		TX-RX Unit	Frequency range	Remarks
TK-2212L	K,M	X57-7120-11	136~174MHz	IF1 : 38.85MHz LOC : 38.4MHz

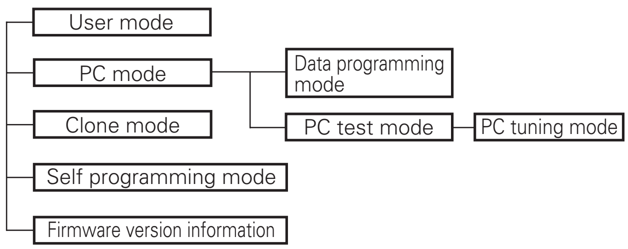
SYSTEM SET-UP



Frequency range (MHz)	RF power	Type
TX/RX 136~174	5.0W	TK-2212L (K,M)

REALIGNMENT

1. Modes



Mode	Function
User mode	For normal use.
PC mode	Used for communication between the transceiver and PC (IBM compatible).
Data programming mode	Used to read and write frequency data and other features to and from the transceiver.
PC test mode	Used to check the transceiver using the PC. This feature is included in the FPU.
Clone mode	Used to transfer programming data from one transceiver to another.
Self programming mode	You can program the frequency, signaling and other functions using only the transceiver.
Firmware version information	Used to confirm the internal firmware version.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC
Clone mode	[<B]+Power ON (Two seconds)
Self programming mode	[S]+Power ON (Two seconds)
Firmware version information	[Side1]+[Side2]+Power ON (Two seconds)

3. PC Mode

3-1. Preface

The transceiver is programmed using a personal computer, a programming interface (KPG-22/22A), USB adapter (KCT-53U) and programming software (KPG-100D).

The programming software can be used with an IBM PC or compatible. Figure 1 shows the setup of an IBM PC for programming.

3-2. Connection procedure

1. Connect the transceiver to the personal computer with the interface cable and USB adapter (When the interface cable is KPG-22A, the KCT-53U can be used.).

Notes:
- You must install the KCT-53U driver in the computer to use the USB adapter (KCT-53U).
- When using the USB adapter (KCT-53U) for the first time, plug the KCT-53U into a USB port on the computer with the computer power ON.

2. When the POWER is switched on, user mode can be entered immediately. When the PC sends a command, the transceiver enters PC mode.
   When data is transmitting from the transceiver, the red LED lights.
   When data is received by the transceiver, the green LED lights.

Notes:
- The data stored in the computer must match the model type when it is written into the EEPROM.
- Change the transceiver to PC mode, then attach the interface cable.

3-3. KPG-22/KPG-22A description (PC programming interface cable: Option)

The KPG-22/22A is required to interface the transceiver with the computer. It has a circuit in its D-sub connector (KPG-22 : 25-pin, KPG-22A : 9-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-22/22A connects the SP/MIC connector of the transceiver to the RS-232C serial port of the computer.

3-4. KCT-53U description (USB adapter : Option)

The KCT-53U is a cable which connects the KPG-22A to a USB port on a computer.

When using the KCT-53U, install the supplied CD-ROM (with driver software) in the computer. The KCT-53U driver runs under Windows 2000 or XP.

3-5. Programming software KPG-100D description

KPG-100D is the programming software for the transceiver supplied on a CD-ROM. This software runs under Windows 98, ME, Windows 2000 or XP on an IBM-PC or compatible machine.

The data can be input to or read from the transceiver and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

REALIGNMENT

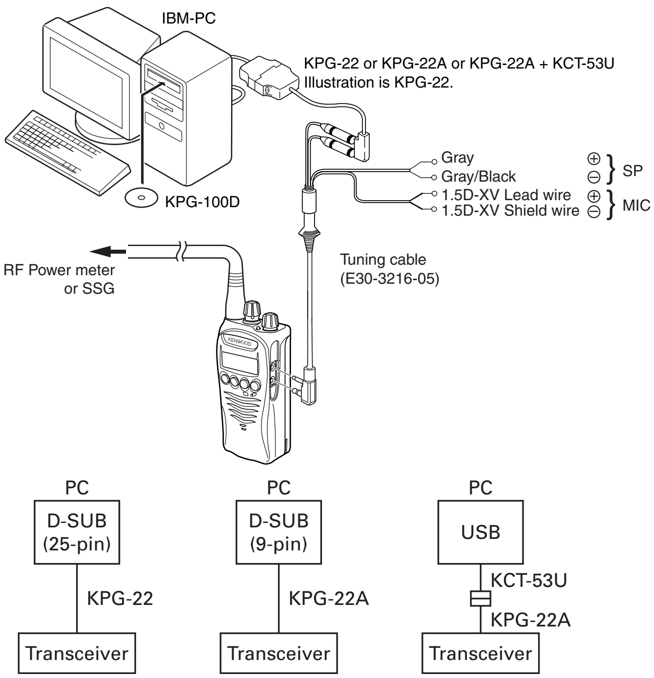


Fig. 1

4. Clone Mode

4-1. Outline

"Clone Mode" copies the transceiver data to another transceiver.

The dealer can copy the transceiver data to another transceiver even without the use of a personal computer.

4-2. Example

The transceiver can copy the programming data to one or more transceivers via RF communication.

The clone source and clone target/s must be in Clone mode.

4-3. Operation

1. To switch the clone target/s to Clone mode, press and hold the [<B] key while turning the transceiver power ON.
2. Wait for 2 seconds. "CLONE" appears on the LCD, followed by "FRQTBL 1".
3. Select a channel table number using the [Selector] knob.
4. To switch the clone source to Clone mode, press and hold the [<B] key while turning the transceiver power ON.
5. Wait for 2 seconds. "CLONE" appears on the LCD, followed by "FRQTBL 1".
6. Select the same channel table number as the clone target/s.
7. Press the [S] key on the clone source to begin data transmission. When the clone target starts to receive data, the green LED will light and "CLONING" will appear on the LCD. The source unit will display "MASTER".
8. When the clone source finishes sending data, a "confirmation" tone will sound and "COMPLETE" will appear on the LCD. If data transmission failed while cloning, the Target unit will produced an error tone and "CLONE NG" will appear on the LCD.
9. If the cloning fails, no data will be available in the Target unit when it is returned to User mode.
10. When the cloning is successful, the Target unit's "Scan" and "Key lock" functions will return to their default values (Scan = OFF, Key lock = OFF).
11. The source will remain in clone mode after cloning. The target unit will return to user mode after a successful cloning.

Notes:

- The dealer can clone data to two or more transceivers by repeating the above procedures.
- If the transceivers Clone Mode is configured as "Disabled", the transceiver cannot enter Clone mode.
- The table shown below will cover the frequency tables used for wireless cloning.
- Clone mode cannot be entered in battery low state.
- A unit cannot be a "Source Unit" if it is unprogrammed. If the [S] key is pressed, an "error" tone will sound.
- Once a unit is set to be the Source, it cannot be a target after the data has been transmitted. This protects the data in the Source unit.
- MSK signaling is used in cloning.
- Electronic interface may cause a failure in data transfer during Wireless Clone, such as when waveforms or electromagnetics are being performed at the workbench.
- **Clone mode can be used ONLY by the authorized service personnel.**
- **The Clone mode setting must be configured as "Disable" before being delivered to the end-user.**
- **To clone, replace the antenna from both the source transceiver and the target transceiver with a dummy load.**
- **The transmit output power is automatically set to Low in Clone mode.**

Cloning Frequency Table

Clone Frequency Table \ Operating Frequency (MHz)	136~174
1	136.000
2	138.000
3	140.000
4	142.000
5	144.000
6	146.000
7	148.000
8	150.000
9	152.000
10	154.000
11	156.000
12	158.000
13	160.000
14	162.000
15	164.000
16	166.000
17	168.000
18	170.000
19	172.000
20	174.000

REALIGNMENT

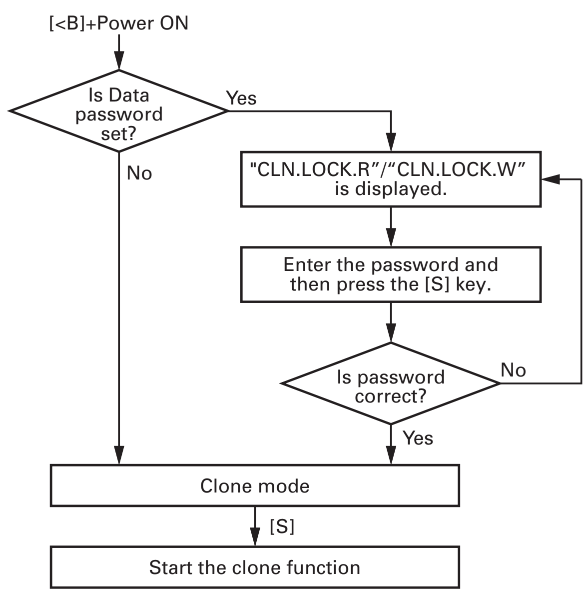
4-4. Adding the Data Password

If the Data password is set to the transceiver, you must enter the password to activate a clone mode. The maximum length of the password is 6 digits.

The following describes how to enter the password.

1. Press and hold the [S] key for 2 seconds while turning the transceiver power on.
2. "CLN.LOCK.R"(When the Read authorization password is set to the transceiver.) / "CLN.LOCK.W" (When the Overwrite password is set to the transceiver.) is displayed on the LCD.
3. If the [selector] knob is rotated while "CLN.LOCK.R"/ "CLN.LOCK.W" is displayed, the number (0 to 9) flashes on the LCD.
   When you press the [C>] key, the currently selected number is determined.
   If you press the [A] key, the least digit of the password is deleted.
   If you press the [S] key after entering the password in this procedure, "FRQTBL 1" is displayed if the entered password is correct.
   If the password is incorrect, "CLN.LOCK.R"/ "CLN.LOCK.W" is redisplayed.

■ **Flow Chart (Source transceiver)**



5. Self Programming Mode

Write mode for frequency data and signaling, etc. To be used ONLY by the authorized service person maintaining the user's equipment. After programming, reset the FPU to the "Self- Programming" disabled mode. Transceivers CANNOT be delivered to the end-user in the self-programming mode.

5-1. Enter to the Self Programming Mode

Press and hold the [S] key for 2 seconds while turning the transceiver power on.

When the transceiver enters in the self programming mode, "1- 1" is displayed 2 seconds after "SELF " is displayed.

Note :

This mode (self programming mode) cannot be set when it has been disabled with the FPU.

5-2. Adding the Data Password

If the Data password is set to the transceiver, you must enter the password to activate a self programming mode. The maximum length of the password is 6 digits.

The following describes how to enter the password.

1. Press and hold the [S] key for 2 seconds while turning the transceiver power on.
2. "SLF.LOCK.R"(When the Read authorization password is set to the transceiver.) / "SLF.LOCK.W" (When the Overwrite password is set to the transceiver.) is displayed on the LCD.
3. If the [selector] knob is rotated while "SLF.LOCK.R"/ "SLF.LOCK.W" is displayed, the number (0 to 9) flashes on the LCD.
   When you press the [C>] key, the currently selected number is determined.
   If you press the [A] key, the least digit of the password is deleted.
   If you press the [S] key after entering the password in this procedure, "SELF" is displayed if the entered password is correct.
   If the password is incorrect, "SLF.LOCK.R"/ "SLF.LOCK.W" is redisplayed.

5-3. Channel Selection Mode

In this mode, the Zone or Channel can be selected.

Press and hold the [S] key for 2 seconds while turning the transceiver power on to enter self programming mode. When the transceiver enters in the self programming mode, the transceiver automatically enters the Channel Selection mode.

2 seconds after displaying "SELF", "1- 1" appears on the LCD.

The setup item for channel selection mode is as follows.

Setup item	Display	Remarks
Select Zone/Channel	*** - *** *** - ***	Zone: 1~128 Channel: 1~128

Key operation

Key	Key Function
[Selector]	Toggle between Zone selection and Channel selection.
[Side1]	No action
[Side2]	No action
[S]	Enter the Item Selection mode
[A]	Error tone sounds
[<B]	Decrement the blinking Zone/Channel number by 1. Press and hold to decrement in steps of 10.
[C>]	Increment the blinking Zone/Channel number by 1. Press and hold to decrement in steps of 10.

Note :

If a non-existing Zone-Channel is selected and the memory for all 128 channels is already filled, an error tone will sound and "MEM.FULL" will appear on the LCD for 2 seconds.

5-4. Item Selection Mode

In this mode, the following items can be selected.

- RX frequency
- RX signaling
- TX frequency
- TX signaling
- Wide/ Narrow
- RF power Hi/Low
- Scan Del/Add
- Beat shift on/off
- Compander on/off

When the [S] key is pressed in the Channel Selection mode, the transceiver enters the Item Selection mode.

Key operation

Key	Key Function
[Selector]	The selected item changes
[Side1]	No action
[Side2]	No action
[S]	Enter the Item Setting mode
[A]	Return to the Channel Selection mode
[<B]	Error tone sounds
[C>]	Error tone sounds

5-5. Item Setting Mode

In this mode, the selected item in the Item Selection mode can be programmed.

When the [S] key is pressed in the Item Selection mode, the transceiver enters the Item Setting mode.

The setup items for item setting mode are as follows.

Setup item	Display	Remarks
1.RX frequency	1. RX FREQ→ ***.*****	Receive frequency 100.00000~280.00000MHz
2.RX signaling	2. RX SIG→ TONE OFF/ QT ***.*/ DQT***N/ DQT***I	Receive QT/DQT
3.TX frequency	3. TX FREQ→ ***.*****	Transmit frequency 100.00000~280.00000MHz
4.TX signaling	4. TX SIG→ TONE OFF/ QT ***.*/ DQT***N/ DQT***I	Transmit QT/DQT
5. Wide / Narrow	5. BAND *	W / N
6.RF power Hi / Low	6. PWR ***	HI / LOW
7.Scan Del / Add	7. SCN ***	DEL / ADD
8.Beat shift on / off	8. SFT ***	ON / OFF
9.Compander on / off	9. CMP ***	ON / OFF

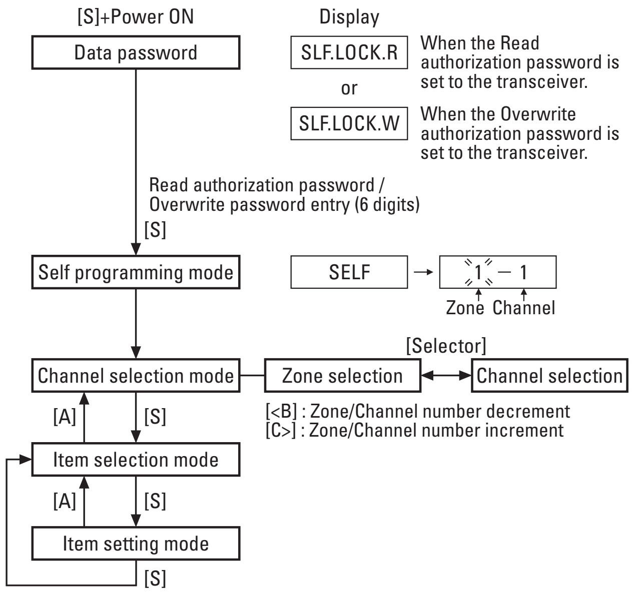
Key operation

Key	Key Function
[Selector]	Changing the selection item (RX/ TX frequency and RX/ TX signaling only)
[Side1]	No action
[Side2]	No action
[S]	• Store the current settings and return to the Item Selection mode. • A MHz digit of the frequency blinks. (RX/ TX frequency only) • The icon of the current signaling configuration blinks. (RX/ TX signaling only)
[A]	Abort the current settings and return to the Item Selection mode without backup.
[<B]	Toggle/ Decrease the blinking value.
[C>]	Toggle/ Increase the blinking value.

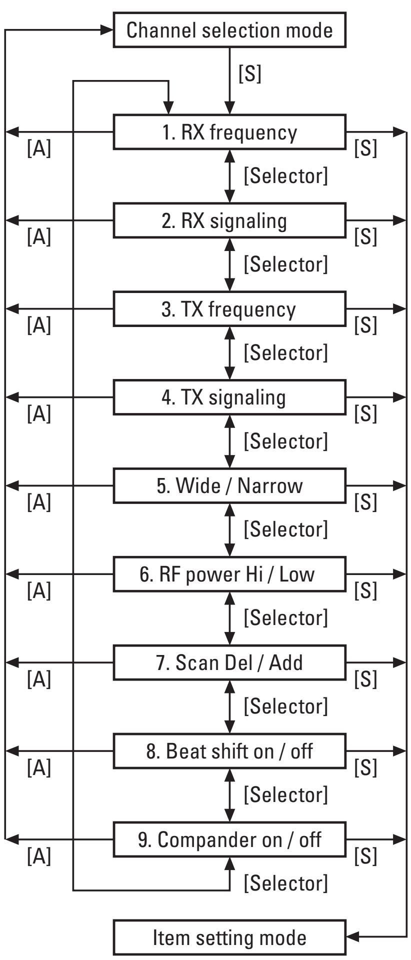
REALIGNMENT

5-6. Self Programming Mode flow chart

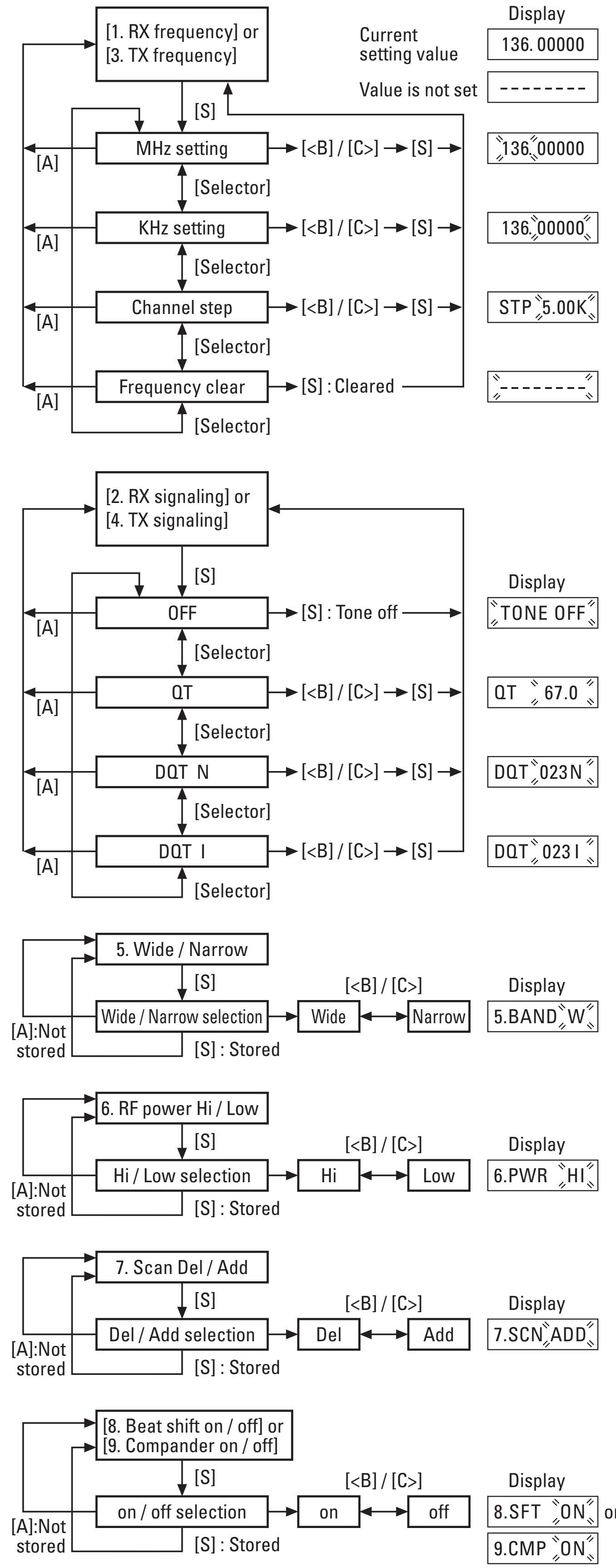
■ Channel selection mode flow chart



■ Item selection mode flow chart



■ Item setting mode flow chart



REALIGNMENT / CIRCUIT DESCRIPTION

6. Firmware Version Information

Turn the transceiver ON with the [Side1] and [Side2] keys held down. Then, the version is displayed during holding the [Side1] and [Side2] keys.

CIRCUIT DESCRIPTION

1. Control Circuit

The control circuit consists of a microprocessor (IC405) and its peripheral circuits. It controls the TX-RX unit and transfers data to the Display unit. IC405 mainly performs the following:

(1) Switching between transmission and reception by the PTT signal input.
(2) Reading system, group, frequency, and program data from the memory circuit.
(3) Sending frequency program data to the PLL.
(4) Controlling squelch on/off by the DC voltage from the squelch circuit.
(5) Controlling the audio mute circuit by the decode data input.
(6) Transmitting tone and encode data.

1) Frequency Shift Circuit

The microprocessor (IC405) operates at a clock of 7.3728MHz. This oscillator has a circuit that shifts the frequency by BEAT SHIFT SW (Q407, Q408).
A beat sound may be able to be evaded from generation if "Beat Shift" is set to ON when it is generated in the internal spurious transmission modulated sound of a transceiver.

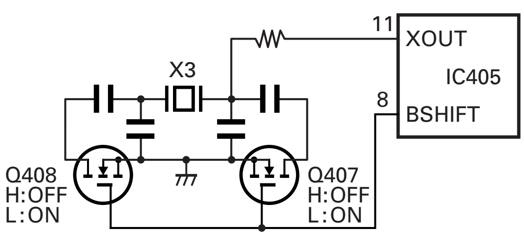


Fig. 1 Frequency shift circuit

2) Memory Circuit

Memory circuit consists of the CPU (IC405) and an EEPROM (IC406). An EEPROM has a capacity of 128k bits that contains the transceiver control program for the CPU and data such as transceiver channels and operating features.

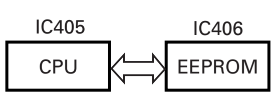


Fig. 2 Memory circuit

3) Low Battery Warning

The battery voltage is checked by the microprocessor. The transceiver generates a warning tone when the battery voltage falls below the warning voltage (2) shown in the table.

(1) The red LED blinks when the battery voltage falls below the voltage (1) shown in the table during transmission. Transmission is still allowed.

Note:
The transceiver checks the battery voltage during reception even when, in the FPU, the Battery Warning status function is set to "While Transmitting" (default setting).
However, the LED does not blink during reception. The red LED blinks during transmission. The transceiver is still usable.

(2) The transceiver immediately stops transmission when the battery voltage falls below the voltage (2) shown in the table. A warning tone sounds while the PTT switch is pressed.

	Ni-MH Battery	Li-ion Battery
(1)	6.2V	6.2V
(2)	5.8V	5.8V

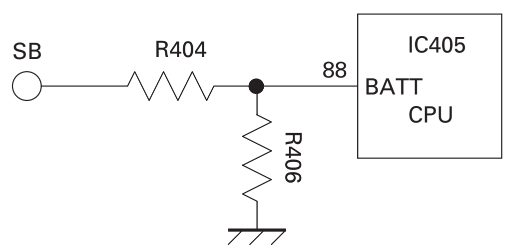


Fig. 3 Low battery warning

PARTS LIST

∗ New Parts. ⚠ indicates safety critical components.
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

L: Scandinavia **K**: USA **P**: Canada
Y: PX (Far East, Hawaii) **T**: England **E**: Europe
Y: AAFES (Europe) **X**: Australia **M**: Other Areas

TK-2212L (Y50-6210-XX)
TX-RX UNIT (X57-7120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination
			TK-2212L		
1	1B	∗	A02-3894-43	PLASTIC CABINET ASSY	
2	3A	∗	A10-4078-41	CHASSIS	
3	2C		B09-0680-03	CAP(SP/MIC) ACCESSORY	
4	2B		B11-1817-04	ILLUMINATION GUIDE(TX/RX)	
5	1A		B11-1830-03	ILLUMINATION GUIDE(LCD)	
6	1A		B38-0906-25	LCD ASSY	
7	1C	∗	B62-1996-00	INSTRUCTION MANUAL	
9	1B		D10-0649-03	LEVER	
10	1B		D21-0863-04	SHAFT	
11	1B		D32-0441-03	STOPPER	
12	2A		E04-0465-05	RF COAXIAL RECEPTACLE(SMA)	
13	3A		E23-1253-04	TERMINAL(BATT-)	
14	2B		E37-1158-05	PROCESSED LEAD WIRE(WHITE:SP+)	
15	2B		E37-1176-05	PROCESSED LEAD WIRE(GREEN:SP-)	
16	3A		F20-3353-14	INSULATING SHEET(CHASSIS BATT+)	
17	2B		G01-4542-04	COIL SPRING(LEVER)	
18	2B		G01-4543-04	COIL SPRING(STOPPER)	
19	2A		G10-1330-04	FIBROUS SHEET(IC302:AUDIO IC)	
21	2A		G10-1348-04	FIBROUS SHEET(SP WIRE)	
22	3A		G11-4283-04	RUBBER SHEET(Q103:FINAL FET)	
23	2A		G11-4359-04	SHEET(FPC CONNECTOR)	
24	3A		G13-2009-04	CUSHION(CHASSIS)	
25	3A		G13-2033-04	CUSHION(TERMINAL BATT-)	
26	3A		G13-2034-14	CUSHION(TERMINAL BATT-)	
27	3A	∗	G13-2038-24	CUSHION(CHASSIS-CERAMIC FILTER)	
28	2A	∗	G13-2039-14	CUSHION(PCB-CERAMIC FILTER)	
30	2A		G13-2053-04	CUSHION(CHASSIS,ENC)	
31	2A		G13-2074-04	CUSHION(PCB)	
32	3A		G13-2088-04	CUSHION(CHASSIS,VOL)	
33	2A		G13-2107-04	CUSHION(MOUNTING HARDWARE)	
34	3A		G53-1604-03	PACKING(CHASSIS)	
35	3A		G53-1605-03	PACKING(TERMINAL BATT+)	
36	2B		G53-1606-13	PACKING(VOL/ENC/LED)	
38	2A		G53-1610-04	PACKING(SMA)	
39	2B		G53-1660-03	PACKING(SP)	
40	2A		G53-1661-03	PACKING(SP/MIC)	
41	2D		H12-4221-05	PACKING FIXTURE	
43	1C		H25-0085-04	PROTECTION BAG (100/200/0.07)	
44	3D	∗	H52-2193-02	ITEM CARTON CASE	
46	2C		J19-5472-03	HOLDER(SP/MIC) ACCESSORY	
50	2A		J19-5473-03	HOLDER ASSY(TERMINAL BATT+)	
51	1A		J21-8496-02	MOUNTING HARDWARE(LCD)	
52	2B		J21-8497-03	MOUNTING HARDWARE(4 KEY)	
53	2B		J21-8525-03	MOUNTING HARDWARE(VOL/ENC)	
54	2D		J29-0713-15	BELT CLIP ACCESSORY	
56	2A		J82-0107-05	FPC	
57	1A		J99-0385-04	ADHESIVE SHEET(LCD)	
59	1B		K29-9308-23	BUTTON KNOB(PTT)	
60	1B		K29-9309-03	KNOB(VOL)	
61	1B		K29-9345-04	KNOB(ENC)	
62	2B		K29-9346-02	KEY TOP	
63	1B		K29-9364-03	BUTTON KNOB(SIDE1/SIDE2)	
A	2B		N14-0819-04	CIRCULAR NUT(VOL KNOB)	
B	2B		N14-0832-04	CIRCULAR NUT(CH KNOB)	
C	2A		N30-2604-48	PAN HEAD MACHINE SCREW(SMA)	
D	3A		N30-2606-48	PAN HEAD MACHINE SCREW(CHASSIS)	
E	1A,2A,2B,3A		N83-2005-48	PAN HEAD TAPTITE SCREW(PCB)	
65	2C		N99-2046-05	SCREW SET ACCESSORY	
66	2A		R31-0661-05	VARIABLE RESISTOR(POWER SW/VOL)	
67	1B		T07-0760-25	SPEAKER	
68	3C		T90-1036-05	HELICAL ANTENNA ACCESSORY	
71	2A		W02-3711-05	ENCODER	
72	1D		W08-0988-05	CHARGER ACCESSORY	
73	1D		W08-0989-05	AC ADAPTER (AC120V) ACCESSORY	K
73	1D		W08-0992-05	AC ADAPTER(AC220-240V) ACCESSORY	M
			TX-RX UNIT (X57-7120-11)		
D403			B30-2156-05	LED(RED)	
D404			B30-2157-05	LED(YELLOW)	
C1			CK73HB1H332K	CHIP C 3300PF K	
C2			CK73HB1C682K	CHIP C 6800PF K	
C3			CK73GB1A105K	CHIP C 1.0UF K	
C4			CK73HB1C103K	CHIP C 0.010UF K	
C5			CK73HB1H102K	CHIP C 1000PF K	
C6			CK73HB1A104K	CHIP C 0.10UF K	
C7 ,8			CC73HCH1H101J	CHIP C 100PF J	
C9			CC73HCH1H100D	CHIP C 10PF D	
C10			CS77AA0J100M	CHIP TNTL 10UF 6.3WV	
C11			CC73HCH1H101J	CHIP C 100PF J	
C12			CK73HB1H102K	CHIP C 1000PF K	
C13			CK73HB1A104K	CHIP C 0.10UF K	
C14			CK73HB1C103K	CHIP C 0.010UF K	
C15			CC73HCH1H100D	CHIP C 10PF D	
C16			CK73HB1H102K	CHIP C 1000PF K	
C17			CC73HCH1H470J	CHIP C 47PF J	
C18			CC73HCH1H180J	CHIP C 18PF J	
C19			CK73HB1A104K	CHIP C 0.10UF K	
C21			CS77AA0J100M	CHIP TNTL 10UF 6.3WV	
C22			CS77AA1VR33M	CHIP TNTL 0.33UF 35WV	
C24			CK73HB1H102K	CHIP C 1000PF K	
C25			CC73HCH1H020B	CHIP C 2.0PF B	
C26			CC73HCH1H300J	CHIP C 30PF J	
C27			CS77CA1C3R3M	CHIP TNTL 3.3UF 16WV	
C29			CK73HB1H471K	CHIP C 470PF K	
C32			CS77CA1V0R1M	CHIP TNTL 0.1UF 35WV	
C33 ,34			CK73HB1H102K	CHIP C 1000PF K	
C35			CC73HCH1H270J	CHIP C 27PF J	
C38			CC73HCH1H060B	CHIP C 6.0PF B	
C39			CK73GB1H332K	CHIP C 3300PF K	
C40			CC73HCH1H040B	CHIP C 4.0PF B	
C41			CK73GB1H682K	CHIP C 6800PF K	
C42			CC73HCH1H060B	CHIP C 6.0PF B	
C43			CC73HCH1H150J	CHIP C 15PF J	
C44			CK73HB1H471K	CHIP C 470PF K	
C45			CK73GB1A105K	CHIP C 1.0UF K	

PARTS LIST

TX-RX UNIT (X57-7120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination
C47			CC73HCH1H101J	CHIP C 100PF J	
C48			CK73HB1H471K	CHIP C 470PF K	
C49			CC73HCH1H101J	CHIP C 100PF J	
C50			CC73HCH1H100D	CHIP C 10PF D	
C51			CK73HB1H102K	CHIP C 1000PF K	
C52			CC73HCH1H181J	CHIP C 180PF J	
C53			CC73HCH1H0R5B	CHIP C 0.5PF B	
C54			CC73HCH1H060B	CHIP C 6.0PF B	
C55			CC73HCH1H121J	CHIP C 120PF J	
C57			CC73HCH1H1R5B	CHIP C 1.5PF B	
C58			CC73HCH1H060B	CHIP C 6.0PF B	
C59			CC73HCH1H1R5B	CHIP C 1.5PF B	
C60			CC73HCH1H010B	CHIP C 1.0PF B	
C61			CC73HCH1H040B	CHIP C 4.0PF B	
C62			CC73HCH1H050B	CHIP C 5.0PF B	
C63			CC73HCH1H101J	CHIP C 100PF J	
C64			CC73HCH1H040B	CHIP C 4.0PF B	
C65 -67			CC73HCH1H050B	CHIP C 5.0PF B	
C68 -70			CK73HB1H471K	CHIP C 470PF K	
C71 ,72			CK73HB1A104K	CHIP C 0.10UF K	
C73 ,74			CC73HCH1H0R5B	CHIP C 0.5PF B	
C75 ,76			CK73HB1H102K	CHIP C 1000PF K	
C77			CK73HB1H471K	CHIP C 470PF K	
C78			CC73HCH1H070B	CHIP C 7.0PF B	
C79			CS77CP0J100M	CHIP TNTL 10UF 6.3WV	
C80			CK73HB1H471K	CHIP C 470PF K	
C81			CC73HCH1H150J	CHIP C 15PF J	
C82			CK73HB1H102K	CHIP C 1000PF K	
C83			CC73HCH1H330J	CHIP C 33PF J	
C84 -86			CK73HB1H102K	CHIP C 1000PF K	
C87			CC73HCH1H100D	CHIP C 10PF D	
C90			CK73HB1H102K	CHIP C 1000PF K	
C101			CK73HB1H102K	CHIP C 1000PF K	
C104			CC73GCH1H390J	CHIP C 39PF J	
C105			CK73HB1H102K	CHIP C 1000PF K	
C107			CK73HB1H102K	CHIP C 1000PF K	
C108			CC73GCH1H390J	CHIP C 39PF J	
C109			CK73GB1C104K	CHIP C 0.10UF K	
C110,111			CK73HB1H102K	CHIP C 1000PF K	
C115			CK73HB1H102K	CHIP C 1000PF K	
C116			CC73GCH1H220J	CHIP C 22PF J	
C117			CC73GCH1H100D	CHIP C 10PF D	
C118			CC73GCH1H101J	CHIP C 100PF J	
C119			CC73GCH1H270J	CHIP C 27PF J	
C120			CK73GB1H102K	CHIP C 1000PF K	
C121			CC73GCH1H100D	CHIP C 10PF D	
C123			CK73GB1A105K	CHIP C 1.0UF K	
C124,125			CK73HB1H102K	CHIP C 1000PF K	
C126			CS77AA1A6R8M	CHIP TNTL 6.8UF 10WV	
C128			CK73HB1H102K	CHIP C 1000PF K	
C130			CC73GCH1H100D	CHIP C 10PF D	
C132			CK73HB1H102K	CHIP C 1000PF K	
C133			CK73GB1H103K	CHIP C 0.010UF K	
C134			CK73GB1C104K	CHIP C 0.10UF K	
C135			CK73GB1A105K	CHIP C 1.0UF K	
C136			CC73GCH1H270J	CHIP C 27PF J	
C137			CK73GB1H103K	CHIP C 0.010UF K	
C138			CK73GB1H102K	CHIP C 1000PF K	
C139			CC73GCH1H680J	CHIP C 68PF J	

Ref. No.	Address	New parts	Parts No.	Description	Destination
C140			CC73GCH1H101J	CHIP C 100PF J	
C141			CC73GCH1H220J	CHIP C 22PF J	
C142			CC73GCH1H150J	CHIP C 15PF J	
C143			CC73GCH1H100D	CHIP C 10PF D	
C144			CC73GCH1H820J	CHIP C 82PF J	
C146			CK73GB1H102K	CHIP C 1000PF K	
C147			CK73HB1H102K	CHIP C 1000PF K	
C148			CK73GB1H102K	CHIP C 1000PF K	
C149			CC73GCH1H220G	CHIP C 22PF G	
C150			CC73GCH1H220J	CHIP C 22PF J	
C151			CK73GB1H102K	CHIP C 1000PF K	
C153			CC73GCH1H100C	CHIP C 10PF C	
C154			CC73GCH1H100D	CHIP C 10PF D	
C155			CC73GCH1H180J	CHIP C 18PF J	
C156			CC73GCH1H120J	CHIP C 12PF J	
C157			CC73GCH1H150J	CHIP C 15PF J	
C158			CC73GCH1H220J	CHIP C 22PF J	
C159			CC73GCH1H070D	CHIP C 7.0PF D	
C160			CC73GCH1H330J	CHIP C 33PF J	
C201			CK73GB1A224K	CHIP C 0.22UF K	
C206			CK73HB1H102K	CHIP C 1000PF K	
C207			CK73HB1H182K	CHIP C 1800PF K	
C208			CK73HB1H471K	CHIP C 470PF K	
C209			CS77CP0J100M	CHIP TNTL 10UF 6.3WV	
C210			CK73HB1H471K	CHIP C 470PF K	
C211			CK73HB1C103K	CHIP C 0.010UF K	
C213			CK73HB1A104K	CHIP C 0.10UF K	
C214			CC73HCH1H680J	CHIP C 68PF J	
C215			CK73HB1H102K	CHIP C 1000PF K	
C216			CK73GB1C104K	CHIP C 0.10UF K	
C217			CK73HB1A104K	CHIP C 0.10UF K	
C218			CK73GB1C104K	CHIP C 0.10UF K	
C219			CC73HCH1H330J	CHIP C 33PF J	
C220			CK73HB1H102K	CHIP C 1000PF K	
C221			CK73GB1C104K	CHIP C 0.10UF K	
C222			CK73HB1H102K	CHIP C 1000PF K	
C224,225			CK73HB1C103K	CHIP C 0.010UF K	
C227			CK73HB1H102K	CHIP C 1000PF K	
C228			CC73GCH1H100C	CHIP C 10PF C	
C230			CC73HCH1H080B	CHIP C 8.0PF B	
C231,232			CK73GB1H103K	CHIP C 0.010UF K	
C233			CC73HCH1H020B	CHIP C 2.0PF B	
C234			CK73HB1C103K	CHIP C 0.010UF K	
C235			CC73HCH1H090B	CHIP C 9.0PF B	
C236			CK73GB1H102K	CHIP C 1000PF K	
C237			CC73HCH1H050B	CHIP C 5.0PF B	
C238			CC73GCH1H120J	CHIP C 12PF J	
C239			CC73HCH1H060B	CHIP C 6.0PF B	
C241			CK73HB1H102K	CHIP C 1000PF K	
C242			CK73GB1C104K	CHIP C 0.10UF K	
C243			CK73HB1H102K	CHIP C 1000PF K	
C244			CC73HCH1H040B	CHIP C 4.0PF B	
C245			CK73HB1H471K	CHIP C 470PF K	
C247			CC73GCH1H040B	CHIP C 4.0PF B	
C248			CC73GCH1H270J	CHIP C 27PF J	
C249			CK73HB1H102K	CHIP C 1000PF K	
C250			CC73GCH1H040B	CHIP C 4.0PF B	
C251			CS77CP0J4R7M	CHIP TNTL 4.7UF 6.3WV	
C252			CK73HB1H102K	CHIP C 1000PF K	
C253			CC73GCH1H4R5B	CHIP C 4.5PF B	

PARTS LIST

TX-RX UNIT (X57-7120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination
C254			CC73GCH1H270J	CHIP C 27PF J	
C255			CC73GCH1H4R5B	CHIP C 4.5PF B	
C256			CK73HB1H102K	CHIP C 1000PF K	
C258			CK73HB1H102K	CHIP C 1000PF K	
C260			CK73HB1H102K	CHIP C 1000PF K	
C262			CK73HB1H102K	CHIP C 1000PF K	
C263			CC73GCH1H100C	CHIP C 10PF C	
C264			CC73GCH1H040B	CHIP C 4.0PF B	
C265			CC73GCH1H330J	CHIP C 33PF J	
C266			CK73HB1H102K	CHIP C 1000PF K	
C267,268			CC73GCH1H030B	CHIP C 3.0PF B	
C269			CC73GCH1H330J	CHIP C 33PF J	
C270			CC73GCH1H040B	CHIP C 4.0PF B	
C271			CC73GCH1H110J	CHIP C 11PF J	
C280			CK73HB1H102K	CHIP C 1000PF K	
C302			CK73HB1C103K	CHIP C 0.010UF K	
C304			CK73GB1A224K	CHIP C 0.22UF K	
C306			CS77AA0J4R7M	CHIP TNTL 4.7UF 6.3WV	
C307,308			CK73HB1A104K	CHIP C 0.10UF K	
C309			CC73GCH1H820J	CHIP C 82PF J	
C310			CK73HB1A683K	CHIP C 0.068UF K	
C311			CK73GB1A105K	CHIP C 1.0UF K	
C312			CC73GCH1H120J	CHIP C 12PF J	
C313			CC73GCH1H121J	CHIP C 120PF J	
C314			CK73HB1A104K	CHIP C 0.10UF K	
C315			CK73GB1A105K	CHIP C 1.0UF K	
C316			CK73GB1C473K	CHIP C 0.047UF K	
C317			CK73HB1A104K	CHIP C 0.10UF K	
C318			CS77AA0J4R7M	CHIP TNTL 4.7UF 6.3WV	
C319			CC73GCH1H271J	CHIP C 270PF J	
C320			CK73HB1C103K	CHIP C 0.010UF K	
C321			CK73GB1C223K	CHIP C 0.022UF K	
C322			CK73HB1C153K	CHIP C 0.015UF K	
C323			CC73GCH1H820J	CHIP C 82PF J	
C324			CC73HCH1H820J	CHIP C 82PF J	
C325			CK73HB1A104K	CHIP C 0.10UF K	
C326			CK73HB1H102K	CHIP C 1000PF K	
C327			CC73HCH1H101J	CHIP C 100PF J	
C328			CK73HB1H391K	CHIP C 390PF K	
C329,330			CK73GB1A105K	CHIP C 1.0UF K	
C331			CK73HB1A104K	CHIP C 0.10UF K	
C332			CK73HB1H471K	CHIP C 470PF K	
C333,334			CK73GB1C104K	CHIP C 0.10UF K	
C335			CC73GCH1H221J	CHIP C 220PF J	
C336			CK73FB1C474K	CHIP C 0.47UF K	
C338			CC73GCH1H101J	CHIP C 100PF J	
C339			CS77AA0J100M	CHIP TNTL 10UF 6.3WV	
C340			CK73GB1C104K	CHIP C 0.10UF K	
C341			CK73GB1C473K	CHIP C 0.047UF K	
C342			CS77AA0J100M	CHIP TNTL 10UF 6.3WV	
C343			CK73GB1C473K	CHIP C 0.047UF K	
C344			CC73GCH1H221J	CHIP C 220PF J	
C345			CS77AB20J101M	CHIP TNTL 100UF 6.3WV	
C346			CK73GB1H102K	CHIP C 1000PF K	
C348			CK73HB1H471K	CHIP C 470PF K	
C350			CK73HB1H102K	CHIP C 1000PF K	
C351,352			CK73HB1C103K	CHIP C 0.010UF K	
C354			CK73HB1A104K	CHIP C 0.10UF K	
C356			CK73HB1A333K	CHIP C 0.033UF K	
C357			CK73HB1E472K	CHIP C 4700PF K	

Ref. No.	Address	New parts	Parts No.	Description	Destination
C401			CC73GCH1H471J	CHIP C 470PF J	
C402			CK73HB1H102K	CHIP C 1000PF K	
C403			CK73GB1C104K	CHIP C 0.10UF K	
C405			CC73GCH1H101J	CHIP C 100PF J	
C406			CK73HB1E472K	CHIP C 4700PF K	
C407			CK73HB1H102K	CHIP C 1000PF K	
C408			CK73HB1E472K	CHIP C 4700PF K	
C409,410			CK73GB1A105K	CHIP C 1.0UF K	
C411			CK73HB1H102K	CHIP C 1000PF K	
C415			CK73HB1H471K	CHIP C 470PF K	
C417			CK73GB1A105K	CHIP C 1.0UF K	
C418			CK73HB1E562K	CHIP C 5600PF K	
C419			CK73HB1H102K	CHIP C 1000PF K	
C421			CK73GB1A105K	CHIP C 1.0UF K	
C424			CK73HB1H102K	CHIP C 1000PF K	
C426,427			CK73GB1A105K	CHIP C 1.0UF K	
C428,429			CK73HB1H102K	CHIP C 1000PF K	
C430			CK73GB1H103K	CHIP C 0.010UF K	
C431			CK73HB1C103K	CHIP C 0.010UF K	
C432			CC73HCH1H050B	CHIP C 5.0PF B	
C433,434			CC73HCH1H030B	CHIP C 3.0PF B	
C435			CC73HCH1H050B	CHIP C 5.0PF B	
C440			CC73GCH1H1R5B	CHIP C 1.5PF B	
C443			CK73GB1A474K	CHIP C 0.47UF K	
C450,451			CK73HB1C103K	CHIP C 0.010UF K	
C452			CK73HB1H102K	CHIP C 1000PF K	
C456			CK73GB1C104K	CHIP C 0.10UF K	
C901,902			CK73GB1A105K	CHIP C 1.0UF K	
TC1 ,2			C05-0245-05	CERAMIC TRIMMER CAPACITOR(10PF)	
CN201			E23-1278-05	TERMINAL	
CN401			E40-6363-05	FLAT CABLE CONNECTOR	
CN402		*	E40-6430-05	FLAT CABLE CONNECTOR	
J301			E11-0707-05	PHONE JACK(2.5/3.5)	
F401			F53-0324-05	FUSE(2.5A)	
101	2A		J30-1288-14	SPACER(MIC ELEMENT)	
CD201			L79-1582-05	TUNING COIL	
CF201	2A		L72-0958-05	CERAMIC FILTER	
L1			L40-4791-86	SMALL FIXED INDUCTOR(4.7UH)	
L3			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)	
L5			L40-5681-86	SMALL FIXED INDUCTOR(0.56UH)	
L6 ,7			L92-0138-05	CHIP FERRITE	
L8			L41-1875-06	SMALL FIXED INDUCTOR(18NH)	
L9			L41-3375-06	SMALL FIXED INDUCTOR(33NH)	
L10			L40-1885-92	SMALL FIXED INDUCTOR(180NH)	
L11			L40-1085-92	SMALL FIXED INDUCTOR(100NH)	
L12			L92-0138-05	CHIP FERRITE	
L13 ,14			L40-2285-92	SMALL FIXED INDUCTOR(220NH)	
L16			L40-3978-67	SMALL FIXED INDUCTOR(39NH)	
L17			L40-2778-67	SMALL FIXED INDUCTOR(27NH)	
L18 ,19			L41-2285-03	SMALL FIXED INDUCTOR(220NH)	
L20 ,21			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)	
L22			L92-0138-05	CHIP FERRITE	
L23		*	L41-3975-06	SMALL FIXED INDUCTOR(39NH)	
L24			L92-0470-05	CHIP FERRITE	
L25		*	L41-8275-06	SMALL FIXED INDUCTOR(82NH)	

If a part reference number is listed in a shaded box, that part does not come with the PCB.

PARTS LIST

TX-RX UNIT (X57-7120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination
L50			L92-0138-05	CHIP FERRITE	
L102			L41-1085-06	SMALL FIXED INDUCTOR(100NH)	
L103			L92-0138-05	CHIP FERRITE	
L104			L41-2775-06	SMALL FIXED INDUCTOR(27NH)	
L105			L40-1585-54	SMALL FIXED INDUCTOR(150NH)	
L106			L92-0149-05	CHIP FERRITE	
L107			L40-2775-54	SMALL FIXED INDUCTOR(27NH)	
L108			L92-0149-05	CHIP FERRITE	
L109			L41-2295-39	SMALL FIXED INDUCTOR(2.2UH)	
L110			L40-5675-92	SMALL FIXED INDUCTOR(56NH)	
L111			L41-1092-44	SMALL FIXED INDUCTOR(1UH)	
L112			L34-4577-05	AIR-CORE COIL	
L113			L34-4563-05	AIR-CORE COIL	
L114,115			L34-4573-05	AIR-CORE COIL	
L116			L34-4576-05	AIR-CORE COIL	
L117			L34-4575-05	AIR-CORE COIL	
L118			L34-4567-05	AIR-CORE COIL	
L119			L34-4566-05	AIR-CORE COIL	
L201			L40-1091-86	SMALL FIXED INDUCTOR(1.0UH)	
L202		*	L41-3975-06	SMALL FIXED INDUCTOR(39NH)	
L203			L92-0138-05	CHIP FERRITE	
L204			L41-5685-39	SMALL FIXED INDUCTOR(0.56UH)	
L205		*	L41-6875-06	SMALL FIXED INDUCTOR(68NH)	
L206		*	L41-1885-06	SMALL FIXED INDUCTOR(180NH)	
L207			L40-1585-92	SMALL FIXED INDUCTOR(150NH)	
L209			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
L210			L92-0138-05	CHIP FERRITE	
L211			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
L213			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
L214			L41-4778-14	SMALL FIXED INDUCTOR(47NH)	
L301			L92-0140-05	CHIP FERRITE	
L302			L92-0149-05	CHIP FERRITE	
L401			L92-0149-05	CHIP FERRITE	
L402-404			L92-0138-05	CHIP FERRITE	
X1			L77-1931-05	TCXO(12.8MHZ)	
X3			L77-1633-05	CRYSTAL RESONATOR(7.3728MHZ)	
XF201			L71-0619-05	MCF(38.85MHZ)	
CP404			RK75HA1J473J	CHIP-COM 47K J 1/16W	
CP405-407			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
R1			RK73HB1J223J	CHIP R 22K J 1/16W	
R2			RK73HB1J103J	CHIP R 10K J 1/16W	
R3			RK73HB1J333J	CHIP R 33K J 1/16W	
R4			RK73HB1J563J	CHIP R 56K J 1/16W	
R5			RK73HB1J104J	CHIP R 100K J 1/16W	
R6			RK73HB1J823J	CHIP R 82K J 1/16W	
R7			RK73HB1J101J	CHIP R 100 J 1/16W	
R8 -11			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R12			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R13			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R14			RK73HB1J334J	CHIP R 330K J 1/16W	
R15			RK73GB2A221J	CHIP R 220 J 1/10W	
R16			RK73GB2A561J	CHIP R 560 J 1/10W	
R17			RK73HB1J101J	CHIP R 100 J 1/16W	
R18			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R19			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R20			RK73HB1J100J	CHIP R 10 J 1/16W	
R21			RK73GB2A681J	CHIP R 680 J 1/10W	
R22			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R23			RK73GB2A103J	CHIP R 10K J 1/10W	
R25			RK73HB1J223J	CHIP R 22K J 1/16W	
R26			RK73HB1J103J	CHIP R 10K J 1/16W	
R27			RK73HB1J220J	CHIP R 22 J 1/16W	
R30			RK73HB1J123J	CHIP R 12K J 1/16W	
R31			RK73HB1J564J	CHIP R 560K J 1/16W	
R32			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R33			RK73HB1J154J	CHIP R 150K J 1/16W	
R34			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R35 ,36			RK73HB1J274J	CHIP R 270K J 1/16W	
R37			RK73HB1J101J	CHIP R 100 J 1/16W	
R38			RK73HB1J181J	CHIP R 180 J 1/16W	
R39			RK73HB1J151J	CHIP R 150 J 1/16W	
R40			RK73HB1J101J	CHIP R 100 J 1/16W	
R41			RK73HB1J154J	CHIP R 150K J 1/16W	
R42			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R43			RK73HB1J101J	CHIP R 100 J 1/16W	
R44			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R45 ,46			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R47			RK73HB1J470J	CHIP R 47 J 1/16W	
R48			RK73HB1J331J	CHIP R 330 J 1/16W	
R49			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R50			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R51			RK73HB1J100J	CHIP R 10 J 1/16W	
R101			RK73HB1J123J	CHIP R 12K J 1/16W	
R103			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R107			RK73GB2A561J	CHIP R 560 J 1/10W	
R108			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R109			RK73GB2A150J	CHIP R 15 J 1/10W	
R110,111			RK73GB2A331J	CHIP R 330 J 1/10W	
R112			RK73GB2A180J	CHIP R 18 J 1/10W	
R113			RK73GB2A331J	CHIP R 330 J 1/10W	
R114			RK73GB2A473J	CHIP R 47K J 1/10W	
R115			RK73GB2A103J	CHIP R 10K J 1/10W	
R116			RK73GB2A150J	CHIP R 15 J 1/10W	
R117			RK73GB2A683J	CHIP R 68K J 1/10W	
R119			RK73GB2A331J	CHIP R 330 J 1/10W	
R120			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R121			RK73GB2A561J	CHIP R 560 J 1/10W	
R122			RK73GB2A473J	CHIP R 47K J 1/10W	
R123			RK73GB2A820J	CHIP R 82 J 1/10W	
R124			RK73GB2A123J	CHIP R 12K J 1/10W	
R126			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R127-129			RK73EB2ER39K	CHIP R 0.39 K 1/4W	
R130-135			RK73GH2A154D	CHIP R 150K D 1/10W	
R136,137			RK73GB2A271J	CHIP R 270 J 1/10W	
R138			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R139			RK73GB2A473J	CHIP R 47K J 1/10W	
R140			RK73GB2A563J	CHIP R 56K J 1/10W	
R141			RK73GB2A104J	CHIP R 100K J 1/10W	
R142			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R143			RK73GB2A104J	CHIP R 100K J 1/10W	
R203			RK73HB1J184J	CHIP R 180K J 1/16W	
R206			RK73GB2A100J	CHIP R 10 J 1/10W	
R207			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R208			RK73HB1J823J	CHIP R 82K J 1/16W	
R209			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R210,211			RK73HB1J332J	CHIP R 3.3K J 1/16W	

PARTS LIST

TX-RX UNIT (X57-7120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R212			RK73HB1J823J	CHIP R 82K J 1/16W	
R213			RK73HB1J392J	CHIP R 3.9K J 1/16W	
R215			RK73HB1J101J	CHIP R 100 J 1/16W	
R216			RK73HB1J124J	CHIP R 120K J 1/16W	
R217			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R218			RK73HB1J561J	CHIP R 560 J 1/16W	
R219,220			RK73GB2A561J	CHIP R 560 J 1/10W	
R221			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R222			RK73GB2A221J	CHIP R 220 J 1/10W	
R223-226			RK73HB1J823J	CHIP R 82K J 1/16W	
R227			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R228,229			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R230			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R231			RK73GB2A470J	CHIP R 47 J 1/10W	
R233			RK73GB2A221J	CHIP R 220 J 1/10W	
R234			RK73GB2A104J	CHIP R 100K J 1/10W	
R237			RK73GB2A184J	CHIP R 180K J 1/10W	
R238			RK73GB2A104J	CHIP R 100K J 1/10W	
R239			RK73GB2A470J	CHIP R 47 J 1/10W	
R240			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R241,242			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R243			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R291			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R301			RK73HB1J473J	CHIP R 47K J 1/16W	
R304			RK73HB1J564J	CHIP R 560K J 1/16W	
R305			RK73HB1J104J	CHIP R 100K J 1/16W	
R306			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R307			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R310			RK73GB2A394J	CHIP R 390K J 1/10W	
R311			RK73HB1J123J	CHIP R 12K J 1/16W	
R312			RK73GB2A334J	CHIP R 330K J 1/10W	
R313			RK73GB2A104J	CHIP R 100K J 1/10W	
R314			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R315			RK73GB2A334J	CHIP R 330K J 1/10W	
R316			RK73GB2A124J	CHIP R 120K J 1/10W	
R317			RK73GB2A474J	CHIP R 470K J 1/10W	
R318			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R319			RK73HB1J563J	CHIP R 56K J 1/16W	
R320			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R321			RK73HB1J224J	CHIP R 220K J 1/16W	
R322			RK73HB1J184J	CHIP R 180K J 1/16W	
R323			RK73HB1J563J	CHIP R 56K J 1/16W	
R324,325			RK73GB2A104J	CHIP R 100K J 1/10W	
R326			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R327			RK73GB2A184J	CHIP R 180K J 1/10W	
R328			RK73GB2A103J	CHIP R 10K J 1/10W	
R329			RK73GB2A823J	CHIP R 82K J 1/10W	
R330			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R331			RK73GB2A393J	CHIP R 39K J 1/10W	
R332			RK73GB2A153J	CHIP R 15K J 1/10W	
R334			RK73GB2A473J	CHIP R 47K J 1/10W	
R335			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R336			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R337			RK73GB2A101J	CHIP R 100 J 1/10W	
R338			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R339			RK73GB2A471J	CHIP R 470 J 1/10W	
R340,341			RK73GB2A103J	CHIP R 10K J 1/10W	
R342			RK73GB2A100J	CHIP R 10 J 1/10W	
R343			RK73GB2A474J	CHIP R 470K J 1/10W	
R344			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R345,346			RK73GB2A101J	CHIP R 100 J 1/10W	
R347			RK73GB2A104J	CHIP R 100K J 1/10W	
R348			RK73GB2A563J	CHIP R 56K J 1/10W	
R349			RK73GB2A333J	CHIP R 33K J 1/10W	
R350			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R352			RK73HB1J104J	CHIP R 100K J 1/16W	
R353			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R354,355			RK73HB1J103J	CHIP R 10K J 1/16W	
R365			RK73HB1J473J	CHIP R 47K J 1/16W	
R403			RK73GB2A101J	CHIP R 100 J 1/10W	
R404			RK73HH1J474D	CHIP R 470K D 1/16W	
R405			RK73GB2A334J	CHIP R 330K J 1/10W	
R406			RK73HH1J474D	CHIP R 470K D 1/16W	
R407			RK73HB1J334J	CHIP R 330K J 1/16W	
R408			RK73HB1J473J	CHIP R 47K J 1/16W	
R409,410			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R412			RK73HB1J473J	CHIP R 47K J 1/16W	
R413,414			RK73GB2A331J	CHIP R 330 J 1/10W	
R415,416			RK73GB2A473J	CHIP R 47K J 1/10W	
R417-420			RK73HB1J473J	CHIP R 47K J 1/16W	
R421,422			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R423			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R424,425			RK73HB1J473J	CHIP R 47K J 1/16W	
R435			RK73HB1J473J	CHIP R 47K J 1/16W	
R436			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R437,438			RK73HB1J473J	CHIP R 47K J 1/16W	
R447			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R450			RK73HB1J680J	CHIP R 68 J 1/16W	
R470			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R901,902			RK73GB2A472J	CHIP R 4.7K J 1/10W	
VR1			R32-0736-05	SEMI FIXED VARIABLE RESISTOR(68K)	
S1 -3			S70-0414-05	TACT SWITCH	
MIC1	2A		T91-0648-05	MIC ELEMENT	
D1			MA2S111-F	DIODE	
D4 ,5			1SV325F	VARIABLE CAPACITANCE DIODE	
D7			1SV325F	VARIABLE CAPACITANCE DIODE	
D9			1SV325F	VARIABLE CAPACITANCE DIODE	
D10			1SV278F	VARIABLE CAPACITANCE DIODE	
D11			MA2S111-F	DIODE	
D101			HSC277	DIODE	
D102			HZU5CLL	ZENER DIODE	
D103,104			HVC131	DIODE	
D105-107			HSC277	DIODE	
D202			HSC277	DIODE	
D203-206			1SV305F	VARIABLE CAPACITANCE DIODE	
D301,302			RB706F-40	DIODE	
D303			MC2858	DIODE	
D401			RB521S-30	DIODE	
D402			1SR154-400	DIODE	
IC1			MB15A02PFV2E1	MOS-IC	
IC2			UPB1509GV	BI-POLAR IC	
IC101			TA75W01FUF	MOS-IC	
IC201			TA31136FNG	MOS-IC	
IC301			AQUA-L	MOS-IC	
IC302			TA7368FG	MOS-IC	

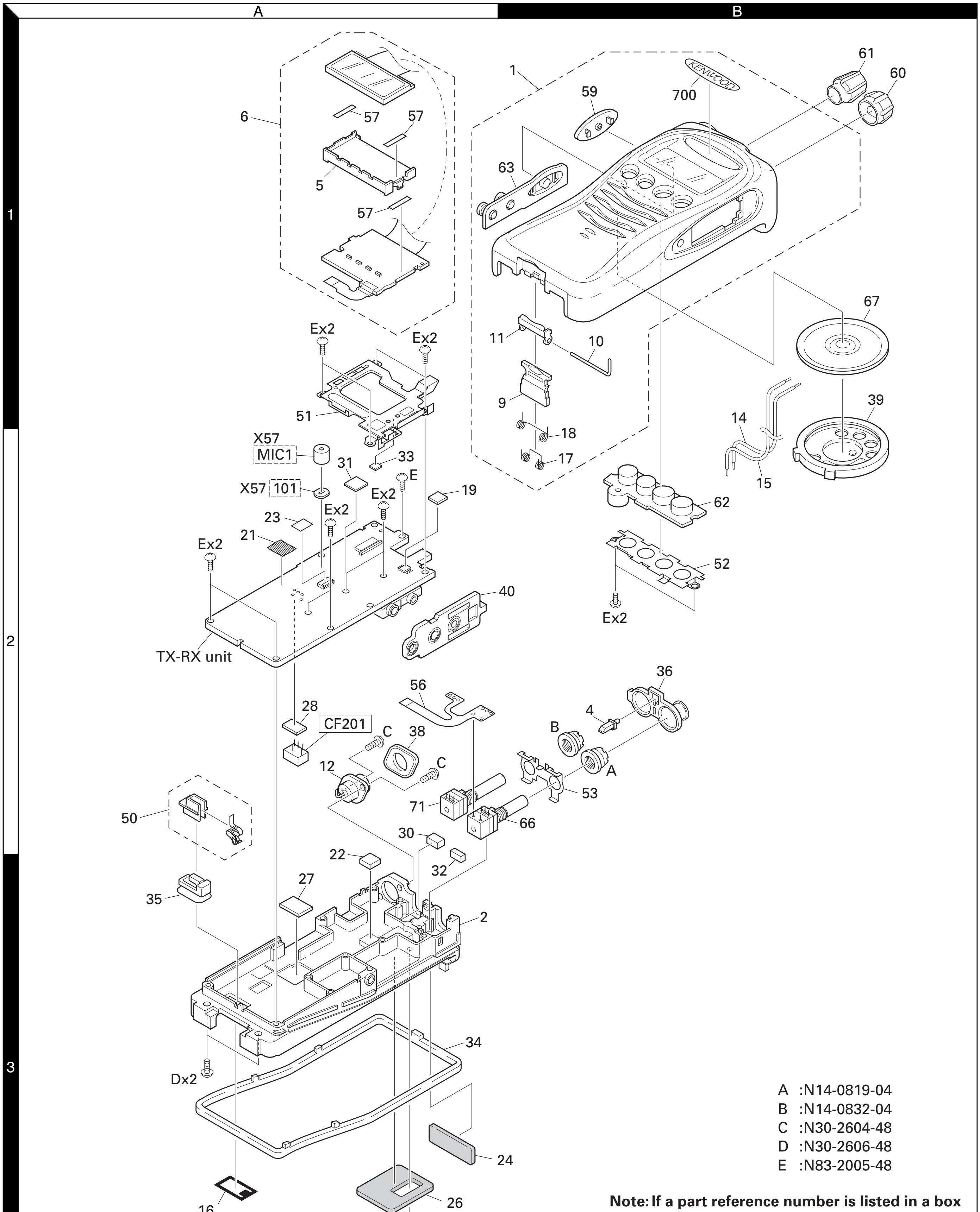
PARTS LIST

TX-RX UNIT (X57-7120-11)

Ref. No.	Address	New parts	Parts No.	Description	Destination
IC401,402			XC6204B502MR	MOS-IC	
IC403			BD4840FVE	MOS-IC	
IC404			BD4845FVE	MOS-IC	
IC405		*	30620MCP422GU	MICROCONTROLLER IC	
IC406		*	AT24128N10SU27	ROM IC	
IC407			TC7W74FU-F	MOS-IC	
Q1			KTC4082	TRANSISTOR	
Q2			2SC5108(Y)F	TRANSISTOR	
Q3 ,4			2SK508NV(K52)	FET	
Q5			RT1P430U	TRANSISTOR	
Q6			2SC5108(Y)F	TRANSISTOR	
Q7			RT1P430U	TRANSISTOR	
Q8			2SC5383-T111	TRANSISTOR	
Q9			2SC5108(Y)F	TRANSISTOR	
Q102			2SC4926YD	TRANSISTOR	
Q103		*	2SK2596-E	FET	
Q104			RT1N141U	TRANSISTOR	
Q105			2SK879(Y)F	FET	
Q106			2SK2595-E	FET	
Q107			RT1N141U	TRANSISTOR	
Q108			2SK1824-A	FET	
Q109			RT1P441U	TRANSISTOR	
Q202			RT1P441U	TRANSISTOR	
Q203			2SC4649(N,P)	TRANSISTOR	
Q204,205			3SK318	FET	
Q301			RT1P141U	TRANSISTOR	
Q302			2SC4919	TRANSISTOR	
Q303			RT1N441U	TRANSISTOR	
Q304			2SA1362-F(GR)	TRANSISTOR	
Q305			RT1N441U	TRANSISTOR	
Q306			2SK3577-A	FET	
Q316			2SK3577-A	FET	
Q401,402			RT1N141U	TRANSISTOR	
Q403			CPH3317	FET	
Q404,405			RT1P237U-T111	TRANSISTOR	
Q407,408			2SK1830F	FET	
Q901			2SK1824-A	FET	
TH101			B57331V2104J	THERMISTOR	
TH203			B57331V2104J	THERMISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination

EXPLODED VIEW

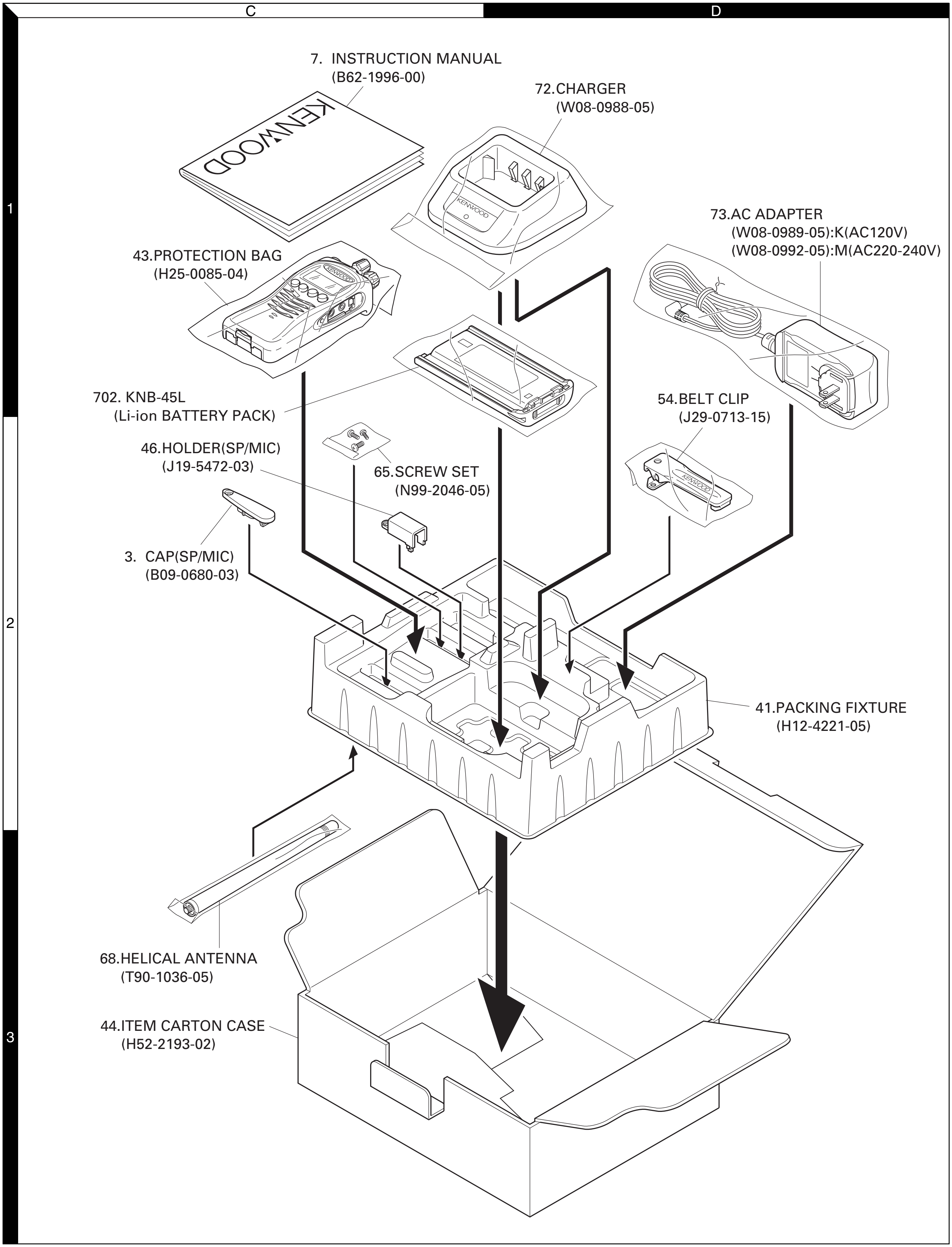


A :N14-0819-04
B :N14-0832-04
C :N30-2604-48
D :N30-2606-48
E :N83-2005-48

Note: If a part reference number is listed in a box on the exploded view of the PCB, that part does not come with the PCB. These parts must be ordered separately.

Parts with the exploded numbers larger than 700 are not supplied.

PACKING



Parts with the exploded numbers larger than 700 are not supplied.

ADJUSTMENT

Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	136 to 174MHz Frequency modulation and external modulation -127dBm/0.1μV to greater than -47dBm/1mV
2. Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω 136 to 174MHz Vicinity of 10W
3. Deviation Meter	Frequency Range	136 to 174MHz
4. Digital Volt Meter (DVM)	Measuring Range Input Impedance	10mV to 10V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
7. Ammeter		5A
8. AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 10V
9. Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12. Tracking Generator	Center frequency Output Voltage	50kHz to 600MHz 100mV or more
13. 8Ω Dummy Load		Approx. 8Ω, 3W
14. Regulated Power Supply		5V to 10V, approx. 3A Useful if ammeter equipped

■ The following parts are required for adjustment

1. Antenna connector adapter

The antenna connector of this transceiver uses an SMA terminal.

Use an antenna connector adapter [SMA(f) – BNC(f) or SMA(f) – N(f)] for adjustment. (The adapter is not provided as an option, so buy a commercially-available one.)

2. Repair Jig (Chassis)

Use jig (part No.: A10-4086-03) for repairing the transceiver. Place the TX-RX unit on the jig and fit it with screws.

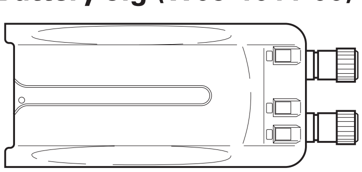
The jig facilitates the voltage check and protects the final amplifier FET when the voltage on the flow side of the TX-RX unit is checked during repairs.

3. Nut wrench

In order to turn the volume nut and the channel selector nut, use a recommendation tool.

KENWOOD part No. : W05-1012-00

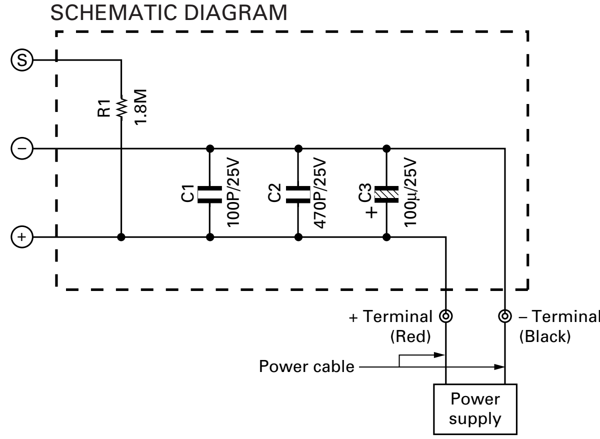
4. Battery Jig (W05-1011-00)



Connect the power cable properly between the battery jig installed in the transceiver and the power supply, and be sure output voltage and the power supply polarity prior to switching the power supply ON, otherwise over voltage and reverse connection may damage the transceiver, or the power supply or both.

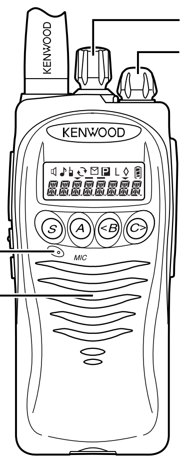
Note: When using the battery jig, you must measure the voltage at the terminals of the battery jig. Otherwise, a slight voltage drop may occur within the power cable, between the power supply and the battery jig, especially while the transceiver transmits.

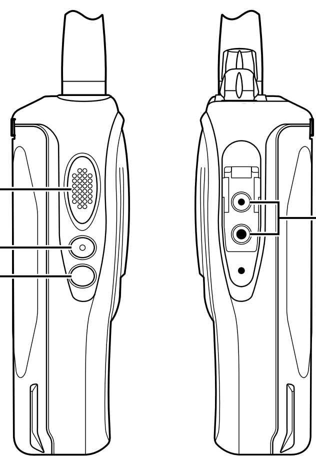
SCHEMATIC DIAGRAM



ADJUSTMENT

Controls





■ Frequency and signaling

The transceiver has been adjusted for the frequencies shown in the following table. When required, readjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

Frequency (MHz)

Channel No.	RX Frequency	TX Frequency
1	155.050	155.100
2	136.050	136.100
3	173.950	173.900
4	155.000	155.000
5	155.200	155.200
6	155.400	155.400

Signaling

Signaling No.	RX	TX
1	None	None
2	None	100Hz Square Wave
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 250.3Hz	QT 250.3Hz
6	DQT D023N	DQT D023N
7	DQT D754I	DQT D754I
8	DTMF 159D	DTMF 159D
9	None	DTMF tone 9
10	None	MSK

■ Preparations for tuning the transceiver

Before attempting to tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is tuned, the unit must be connected to a suitable dummy load (i.e. power meter).

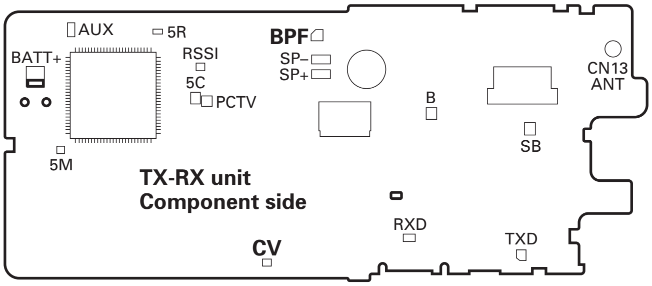
The speaker output connector must be terminated with a 8Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

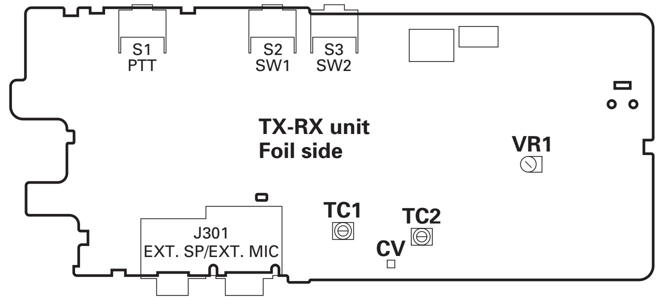
Adjustment Frequency

TEST CH	RX Frequency	TX Frequency
Low	136.050MHz	136.100MHz
Low’	145.550MHz	145.600MHz
Center	155.050MHz	155.100MHz
High’	164.550MHz	164.600MHz
High	173.950MHz	173.900MHz

ADJUSTMENT

Adjustment Points





BPF : Band-pass wave form test point
CV : VCO lock voltage adjustment terminal

VR1 : Frequency adjustment
TC1 : Transmit VCO lock voltage adjustment
TC2 : Receive VCO lock voltage adjustment
CV : VCO lock voltage adjustment terminal

Common Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1.Setting	1) BATT terminal voltage:7.5V 2) SSG standard modulation [Wide] MOD:1kHz,DEV:3kHz [Narrow] MOD:1kHz,DEV:1.5kHz					
2.VCO lock voltage RX	1) CH:High	Power meter DVM	ANT CV	TC2	3.8V	±0.1V
	2) CH:Low				Check	0.6V or more
3.VCO lock voltage TX	3) CH:High PTT:ON			TC1	4.2V	±0.1V
	4) CH:Low PTT:ON				Check	0.6V or more

Transmitter Section

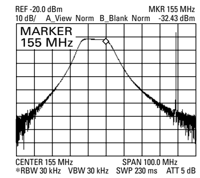
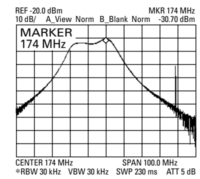
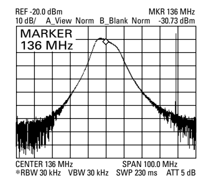
Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1.Frequency Adjust	1) CH:High 2) PTT:ON	Frequency counter	ANT	VR1	High frequency ±50Hz	**Note:** After replacing the TCXO(X1) align frequency.
2.High power Adjust	TEST CH: Low Center High (3 points) BATT terminal voltage:7.5V PTT:ON	Power meter Ammeter		Programming Software:KPG-100D	5.0W	±0.1W 1.9 A or less
3.High power Check	TEST CH: Low' High' BATT terminal voltage:7.5V PTT:ON				Check	4.8~5.2W 1.9 A or less
4.Low power Adjust	TEST CH: Low Center High (3 points) BATT terminal voltage:7.5V PTT:ON			Programming Software:KPG-100D	1.05W	±0.1W 0.9 A or less
5.Low power Check	TEST CH: Low' High' BATT terminal voltage:7.5V PTT:ON				Check	0.9~1.25W 0.9 A or less

ADJUSTMENT

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
6. VOX 1 Writing	TEST CH:Center AG:1KHz/45mV	Power meter Deviation meter	ANT SP/MIC connector	Programming Software:KPG-100D		
7. DQT balance Adjust [Wide]	TEST CH: Center Low High (3 points) LPF:3kHz HPF:OFF PTT:ON	Oscilloscope AG AF VTVM	ANT	Programming Software:KPG-100D	Make the demodulation wave into square waves.	
[Narrow]	TEST CH:Center PTT:ON					
8. Max deviation Adjust [Wide]	TEST CH: Center Low High (3 points) AG:1kHz/110mV Deviation meter filter LPF:15kHz HPF:OFF PTT:ON		ANT SP/MIC connector	Programming Software:KPG-100D	4.2kHz (According to the larger +,–)	±80Hz
[Narrow]	TEST CH:Center PTT:ON				2.2kHz (According to the larger +,–)	±80Hz
9. QT deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF:3kHz HPF:OFF PTT:ON		ANT	Programming Software:KPG-100D	0.80kHz	±40Hz
[Narrow]	TEST CH: Center PTT:ON				0.40kHz	±40Hz
10. DQT deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF:3kHz HPF:OFF PTT:ON				0.75kHz	±40Hz
[Narrow]	TEST CH:Center PTT:ON				0.38kHz	±40Hz
11. DTMF deviation Adjust [Wide]	TEST CH:Center LPF:15kHz HPF:OFF PTT:ON				3.0kHz	±100Hz
[Narrow]	TEST CH:Center PTT:ON				1.5kHz	±100Hz
12. MSK deviation Adjust [Wide]	TEST CH: Center Low High (3 points) LPF:15kHz HPF:OFF PTT:ON				3.1kHz	±100Hz
[Narrow]	TEST CH:Center PTT:ON				1.5kHz	±100Hz

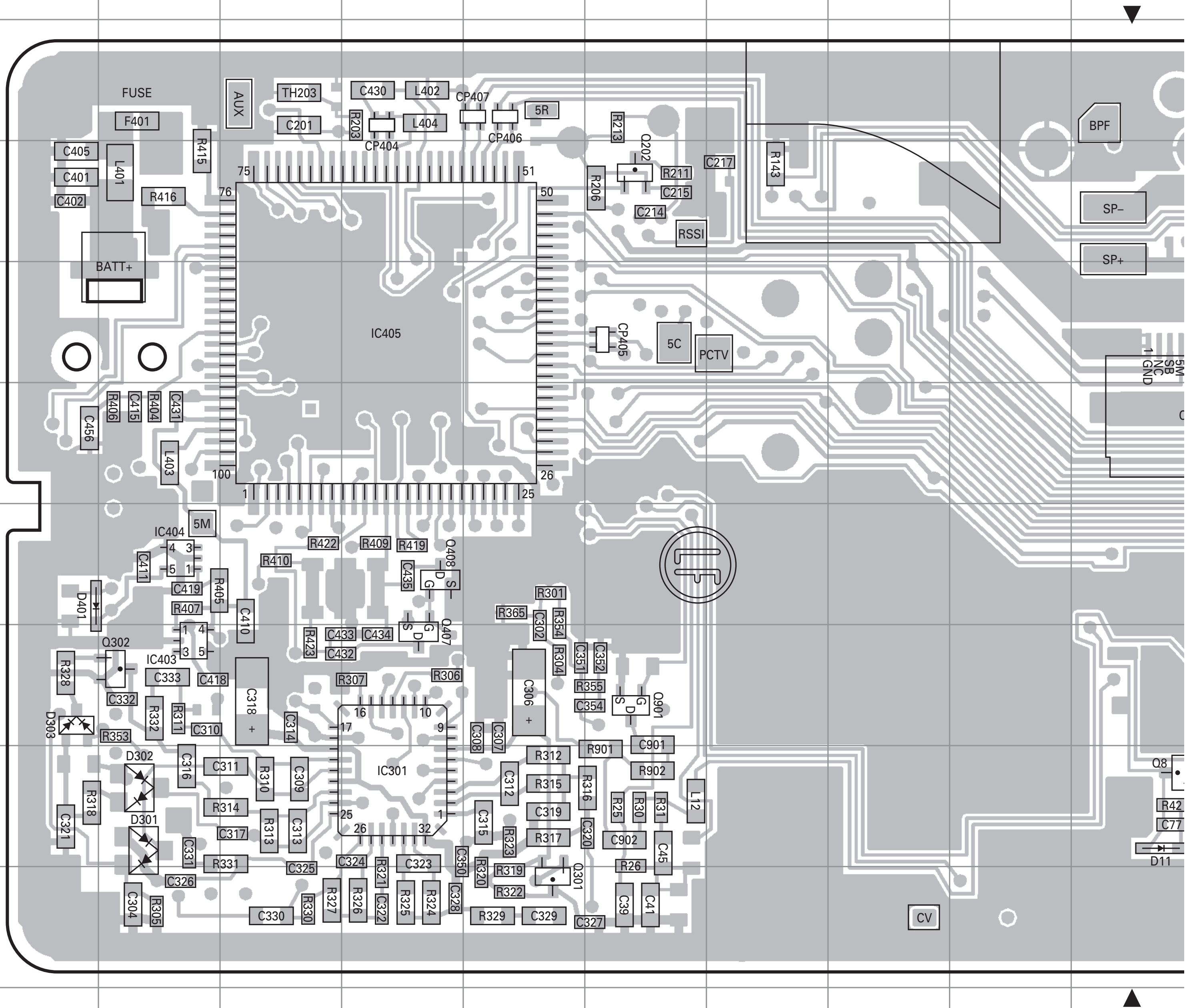
ADJUSTMENT

Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1.BPF Wave Adjust	(1)Center frequency Spectrum analyzer setting Center-f : 155MHz Span : 100MHz RBW : 30kHz VBW : 30kHz ATT : 5dB (2)High-edge frequency Spectrum analyzer setting Center-f : 174MHz (3)Low-edge frequency Spectrum analyzer setting Center-f : 136MHz	Spectrum analyzer	ANT BPF	Programming Software: KPG-100D	Adjust the waveform as shown to the right.	  
2.Sensitivity Check [Wide]	TEST CH: Low Center High SSG output:–117 dBm(0.3µV) SSG MOD:3.0kHz	SSG DVM Oscilloscope AF VTVM	ANT		Check	12dB SINAD or more
[Narrow]	TEST CH: Center SSG output:–115 dBm(0.4µV) SSG MOD:1.5kHz					
3.SQL1 (Threshold) Writing [Wide]	TEST CH: Center Low High SSG output:–123 dBm(0.16µV) SSG MOD:3.0kHz			Programming Software: KPG-100D	Write	Squelch open
[Narrow]	TEST CH: Center SSG output:–122 dBm(0.18µV) SSG MOD:1.5kHz					
4.SQL9 (Tight) Writing [Wide]	TEST CH: Center Low High SSG output:–117 dBm(0.3µV) SSG MOD:3.0kHz					
[Narrow]	TEST CH:Center SSG output:–116 dBm(0.35µV) SSG MOD:1.5kHz					
5.BATT detection Writing	BATT terminal voltage:5.9V	DVM	ANT BATT terminal			BATT terminal voltage:5.9V

TK-2212L PC BOARD

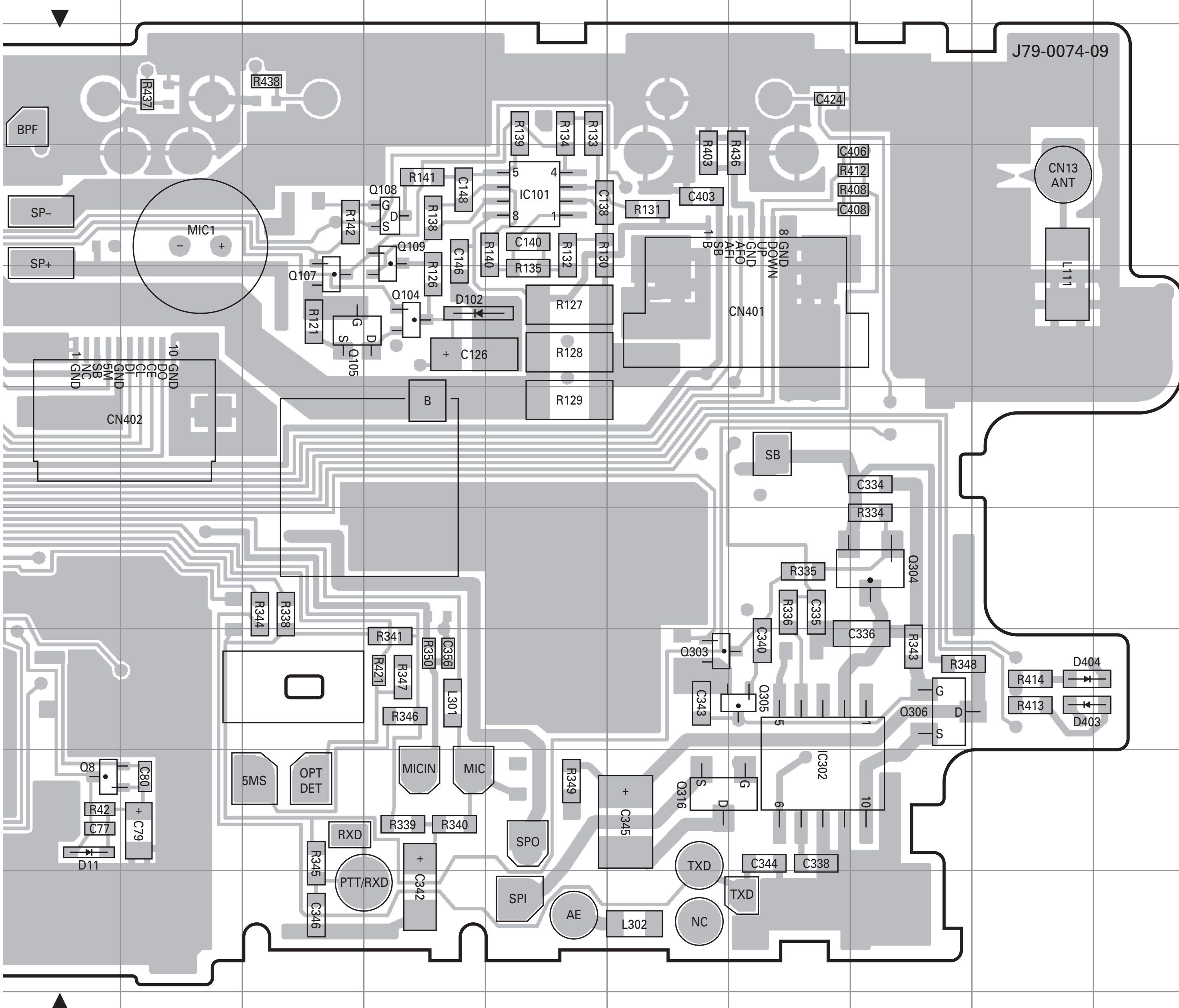
TX-RX UNIT (X57-7120-11) Component side view (J79-0074-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC101	4N	Q105	5L	Q304	7Q	D102	5M
IC301	9D	Q107	5L	Q305	8P	D301	9B
IC302	9P	Q108	4M	Q306	8Q	D302	9B
IC403	8B	Q109	4M	Q316	9O	D303	8A
IC404	7B	Q202	4F	Q407	8D	D401	7A
IC405	5D	Q301	10E	Q408	7D	D403	8R
Q8	9J	Q302	8B	Q901	8F	D404	8R
Q104	5M	Q303	8O	D11	9J		

PC BOARD TK-2212L

TX-RX UNIT (X57-7120-11) Component side view (J79-0074-09)



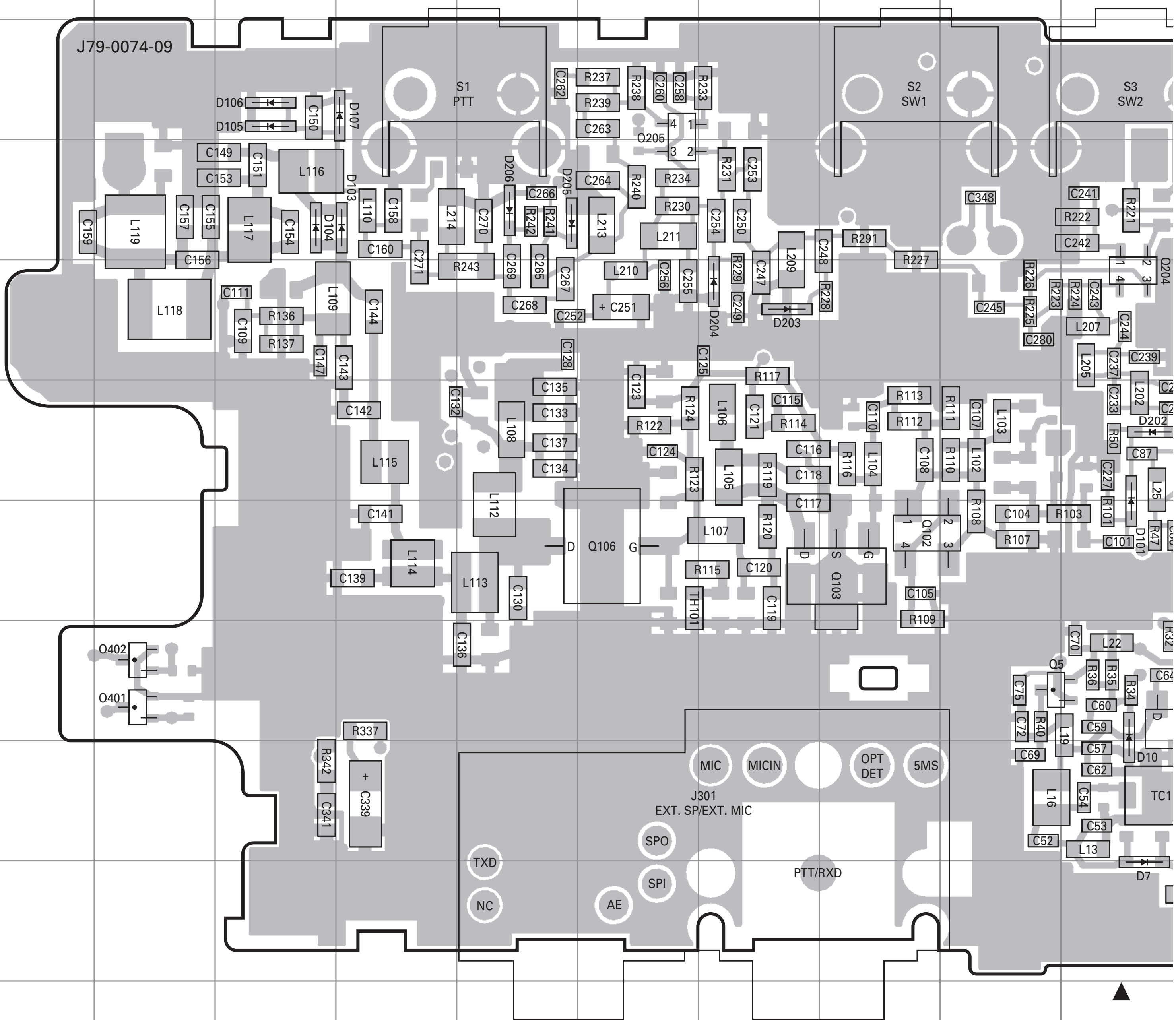
Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	

Foil side

TK-2212L **PC BOARD**

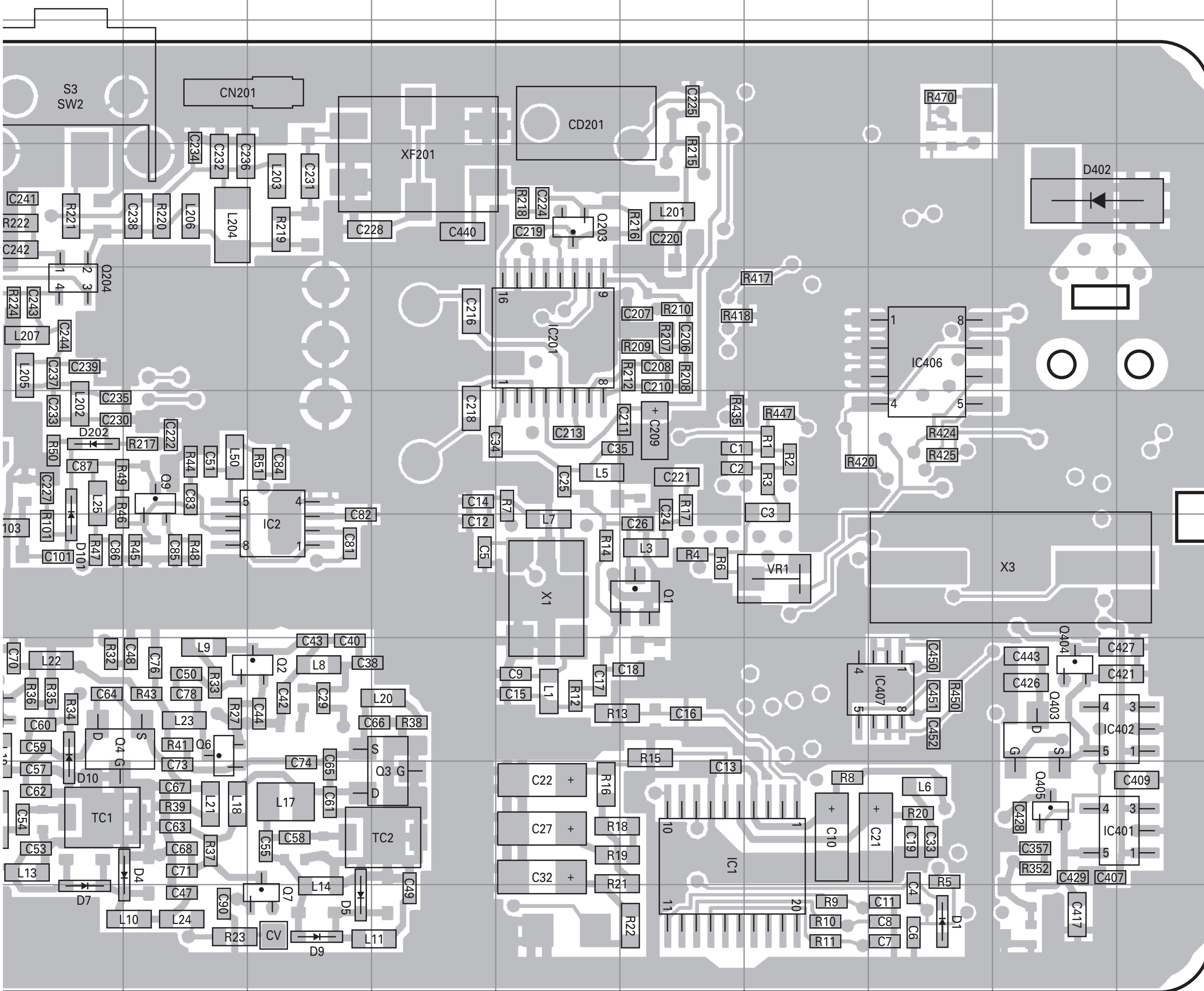
TX-RX UNIT (X57-7120-11) Foil side view (J79-0074-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9O	Q3	9M	Q203	4N	D4	9K	D106	3C
IC2	7L	Q4	8J	Q204	5J	D5	10L	D107	3D
IC201	5N	Q5	8I	Q205	3F	D7	10J	D202	6J
IC401	9S	Q6	8K	Q401	8B	D9	10L	D203	5G
IC402	8S	Q7	10L	Q402	8B	D10	8J	D204	5G
IC406	5Q	Q9	6K	Q403	8R	D101	7J	D205	4E
IC407	8Q	Q102	7H	Q404	8R	D103	4D	D206	4E
Q1	7O	Q103	7H	Q405	9R	D104	4C	D402	4R
Q2	8L	Q106	7F	D1	10Q	D105	3C		

PC BOARD TK-2212L

TX-RX UNIT (X57-7120-11) Foil side view (J79-0074-09)

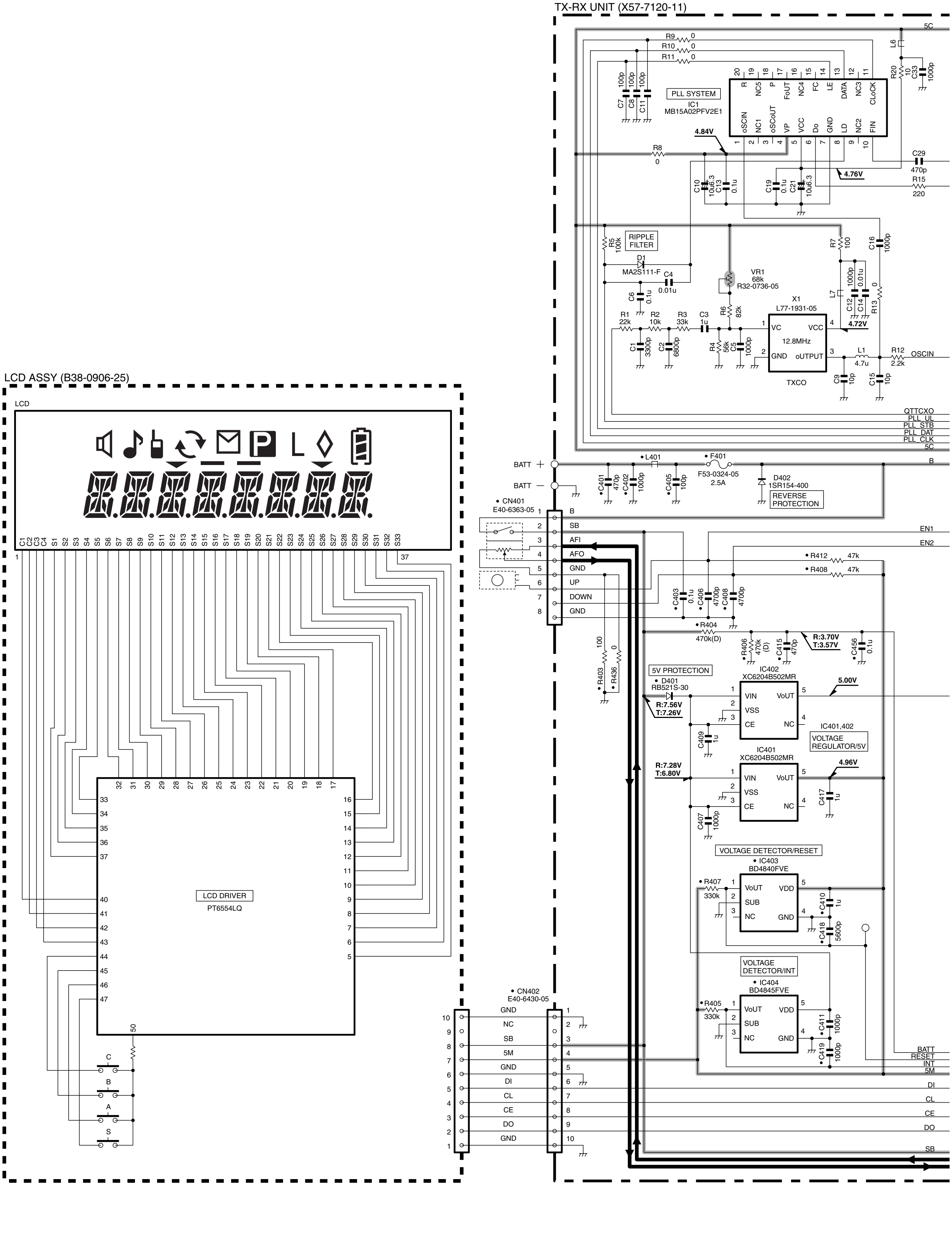


Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	

Foil side

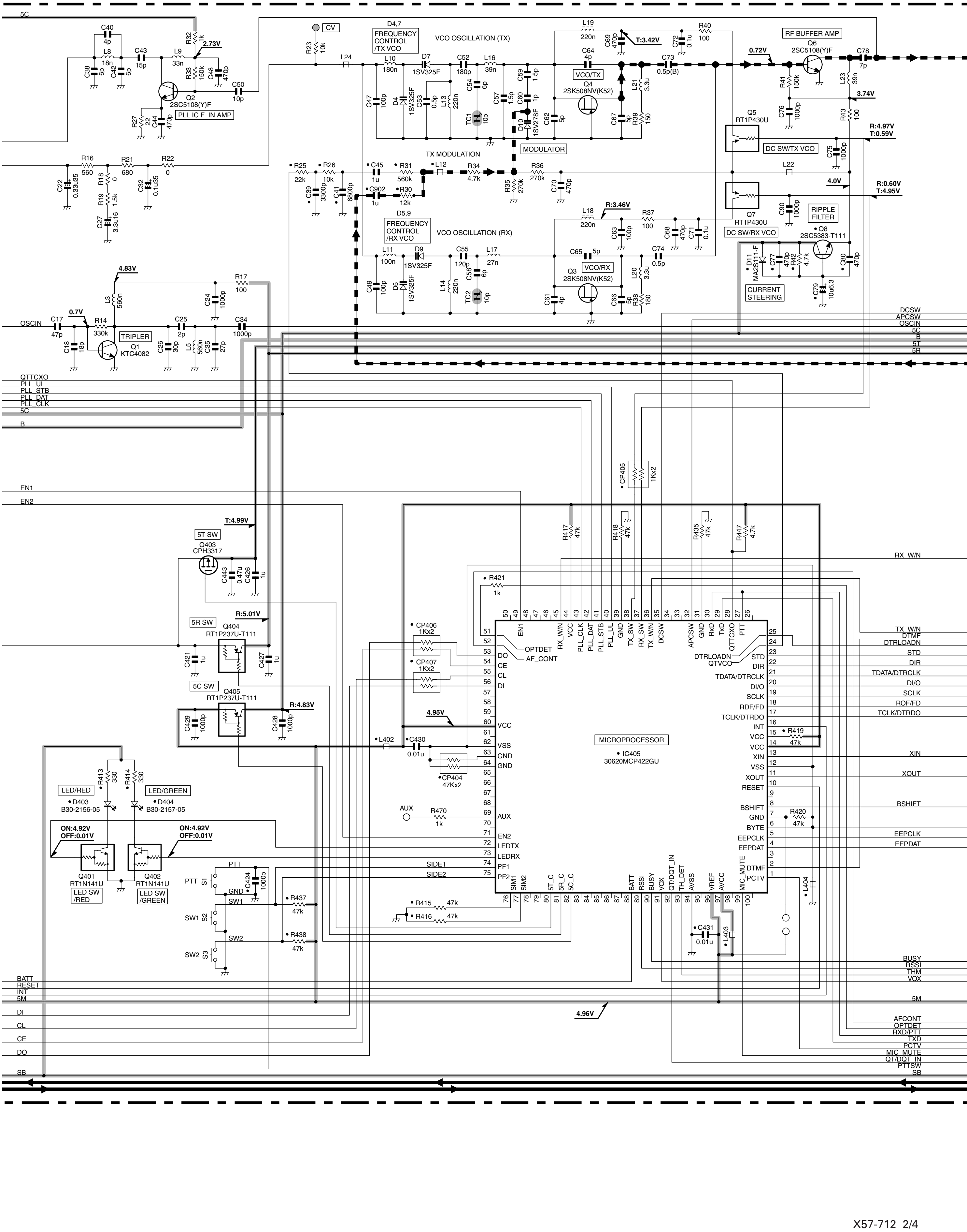
TK-2212L SCHEMATIC DIAGRAM



X57-712 1/4

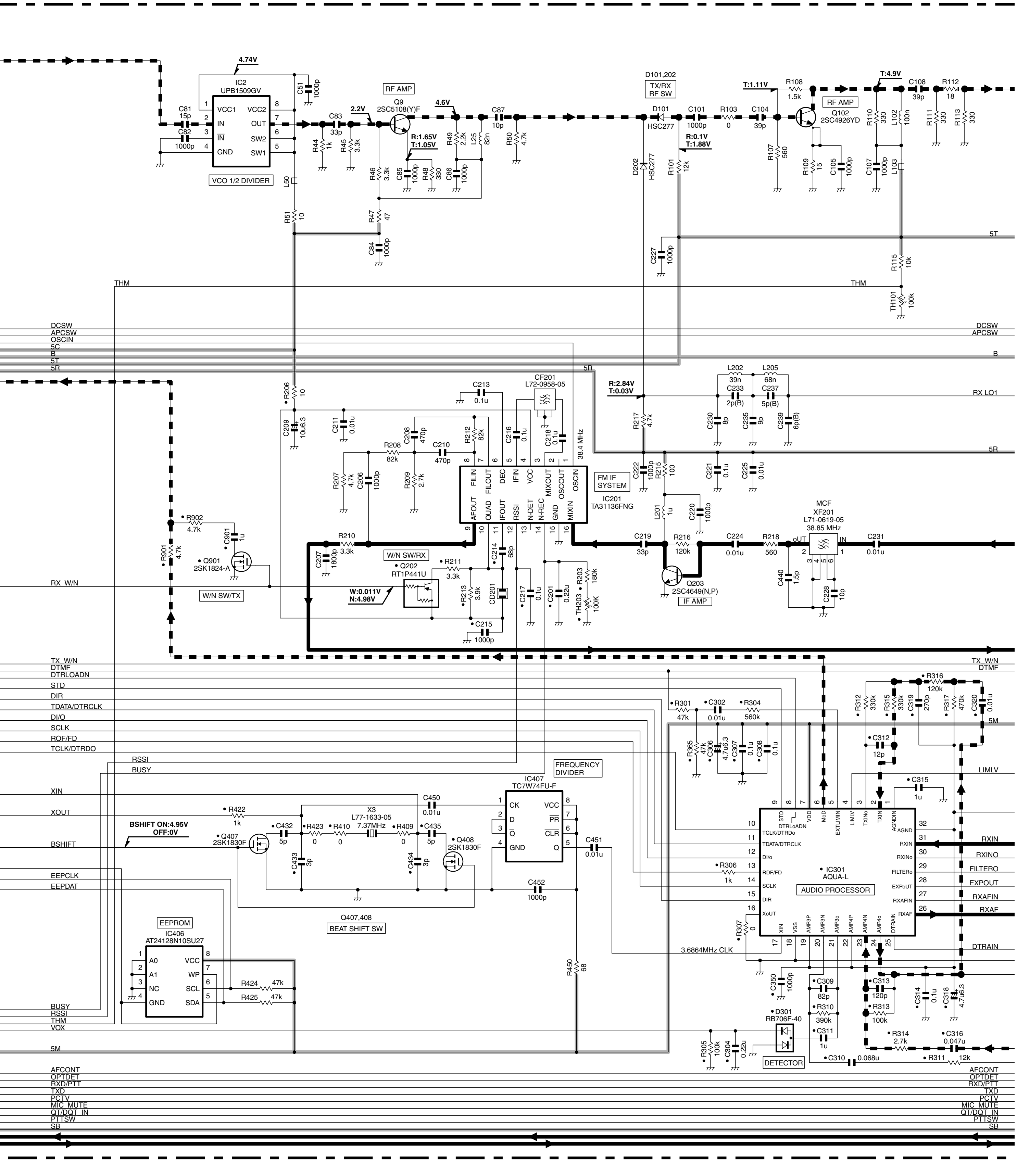
SCHEMATIC DIAGRAM TK-2212L

TX-RX UNIT (X57-7120-11)



TK-2212L SCHEMATIC DIAGRAM

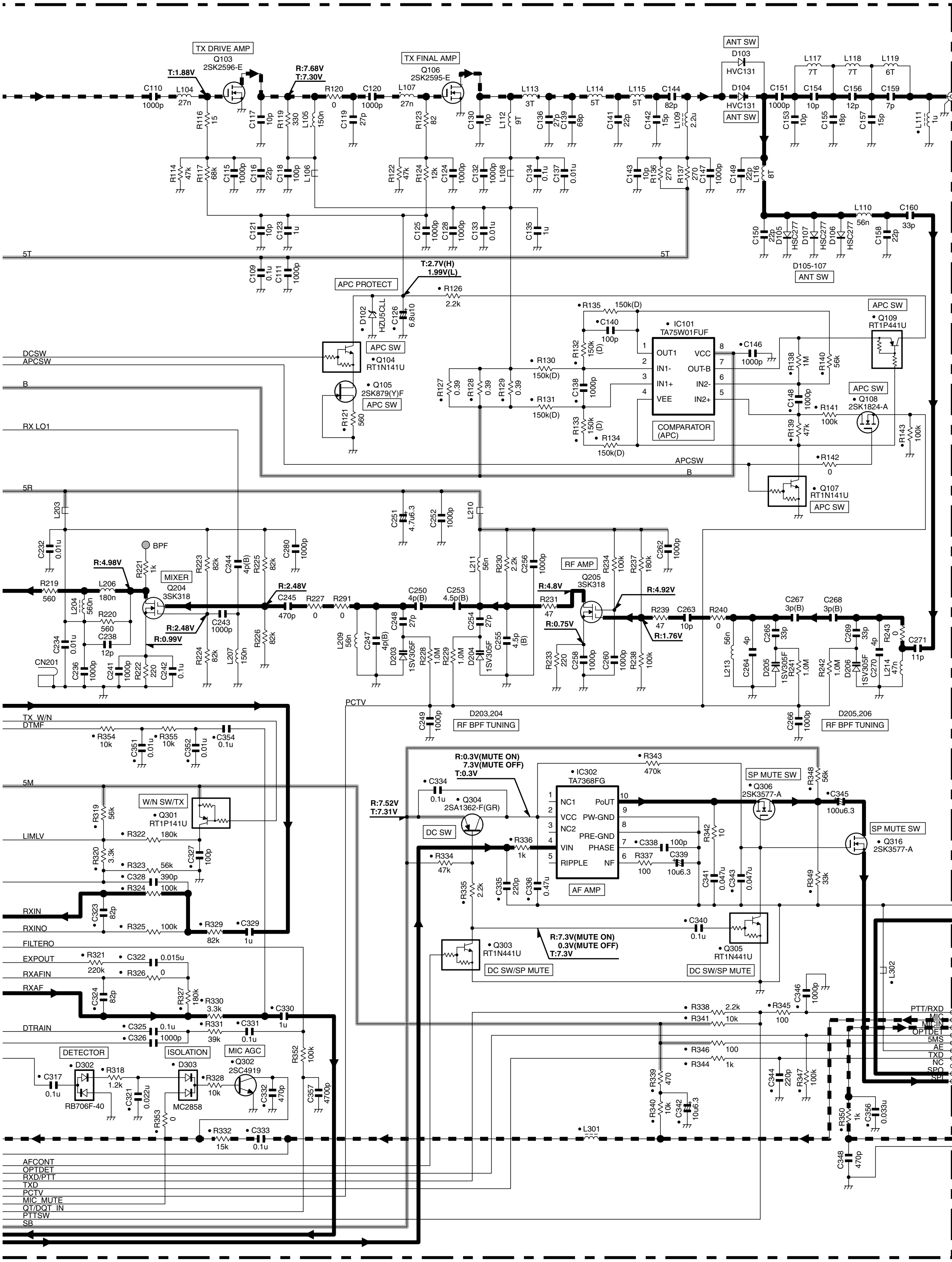
TX-RX UNIT (X57-7120-11)



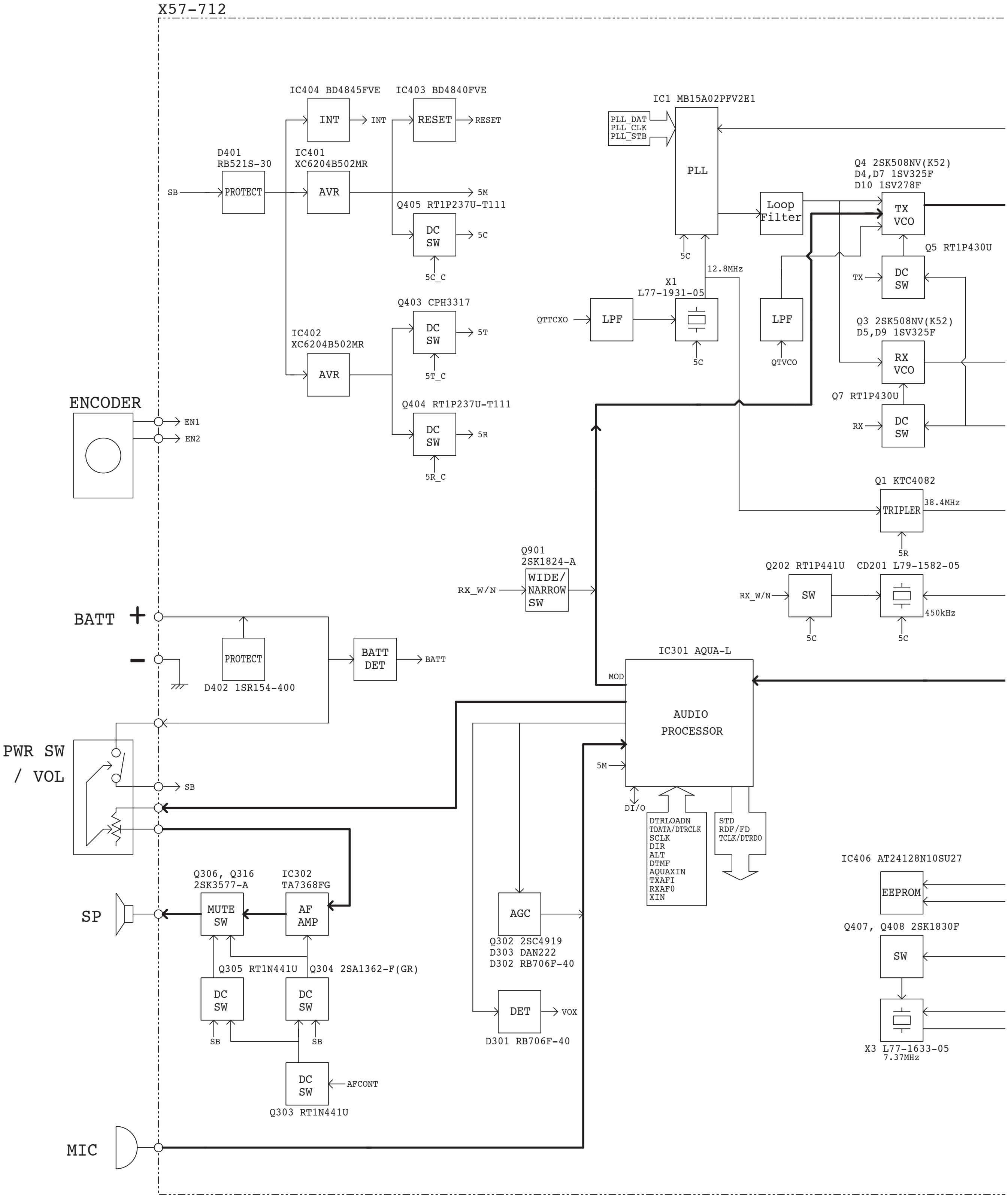
SCHEMATIC DIAGRAM TK-2212L

Note : The components marked with a dot (●) are parts of layer 1.

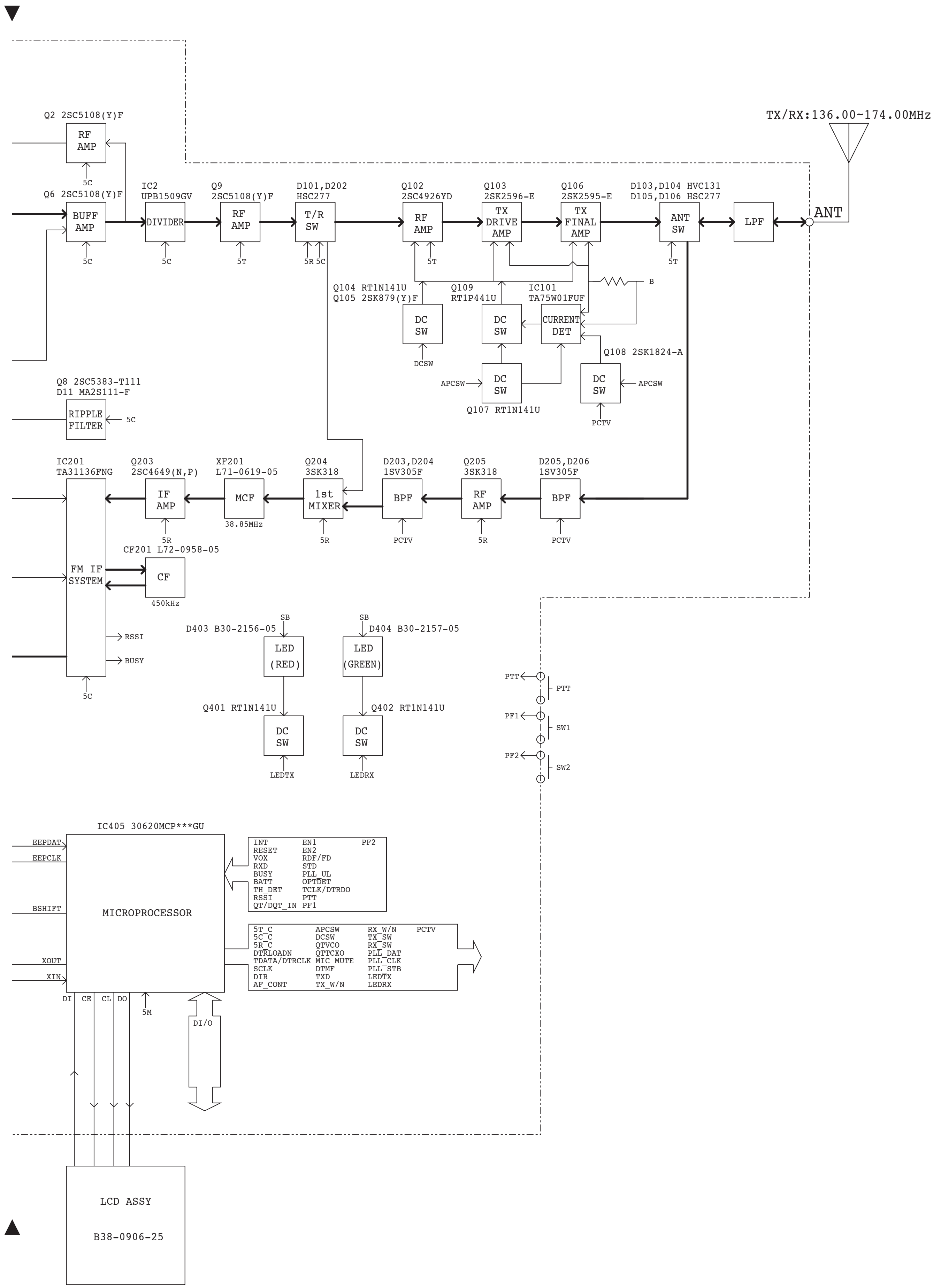
TX-RX UNIT (X57-7120-11)



BLOCK DIAGRAM

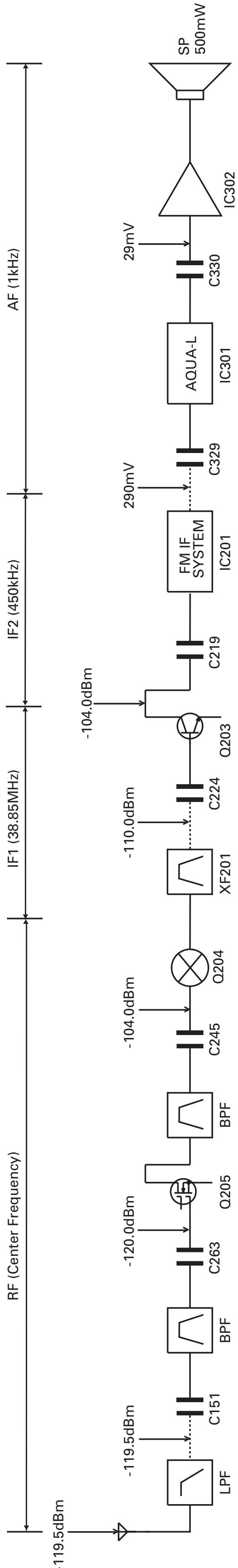


BLOCK DIAGRAM



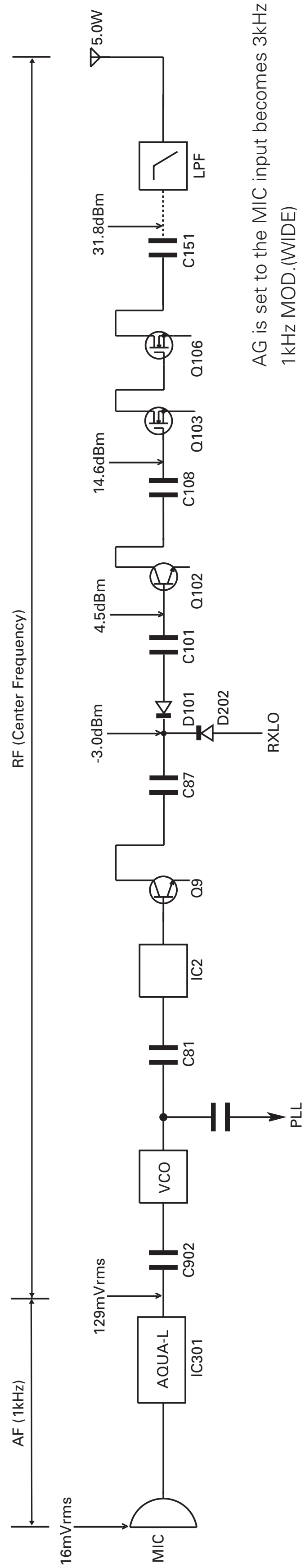
LEVEL DIAGRAM

Receiver Section



To make measurements in the AF section, connect the AC level meter. (ANT input: -53dBm, 1kHz FM, 3kHz DEV (WIDE).)
In the RF section, use 1000pF coupling capacitor.
(The display shows the SSG input value required to obtain 12dB SINAD without local level.)

Transmitter Section



AG is set to the MIC input becomes 3kHz DEV at 1kHz MOD.(WIDE)
To make measurements in the AF section, connect the AC level meter.
In the RF section, use 1000pF coupling capacitor.

OPTIONAL ACCESSORIES

KSC-35 (RAPID CHARGER)

■ External View

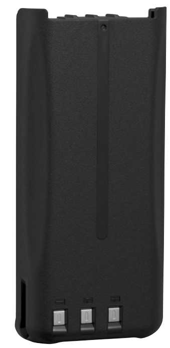


■ Specifications

Charging time .... KNB-45L : Approx.180 minutes
Dimensions (Charger only) .... 86.3W x 43.2H x 100.0D (mm)
3-3/8W x 1-45/64 x 4D (inches)
Weight (Charger only) .... Approx. 90g / 0.2 lbs

KNB-45L (Li-ion BATTERY PACK)

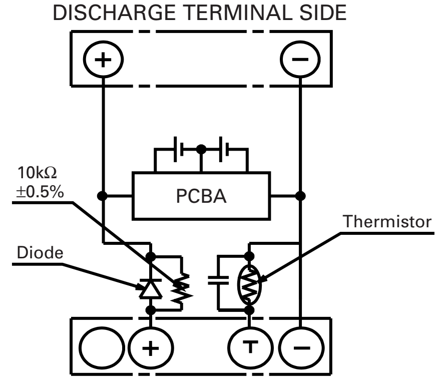
■ External View



■ Specifications

Voltage .... 7.4V (3.7V x 2)
Battery capacity ... 2000mAh

■ Schematic Diagram



SPECIFICATIONS

General

Frequency Range	136~174MHz
Number of Channels	Zone : Max.128 per Radio Channel : Max.128 per Zone
Channel Spacing	25kHz, 30kHz (Wide) 12.5kHz, 15kHz (Narrow)
Battery Voltage	7.5 V DC±20%
Battery Life	
(5-5-90 duty cycle, during high power, Battery Saver off)	KNB-45L(2000mAh) : Approx.12 hours
Operating Temperature Range	–22˚F to +140˚F (–30˚C to +60˚C) (+14˚F to +140˚F (–10˚C to +60˚C) when KNB-45L in use)
Frequency Stability	±2.5ppm (–22˚F to +140˚F / –30˚C to +60˚C)
Antenna Impedance	50Ω
Channel Frequency Spread	38MHz
Dimensions (W x H x D)	
(Projections not included, Min/Max)	
Radio Only	54 x 122 x 21.1 mm / 57 x 124.5 x 30.1 mm 2-1/8 x 4-13/16 x 13/16 in. / 2-1/4 x 4-7/8 x 1-3/16 in.
With KNB-45L (2000mAh battery)	54 x 122 x 33 mm / 57 x 124.5 x 42 mm 2-1/8 x 4-13/16 x 1-5/16 in. / 2-1/4 x 4-7/8 x 1-5/8 in.
Weight (net)	
Radio Only	6.3 oz (180g)
With KNB-45L (2000mAh battery)	10.6 oz (300g)

Receiver (Measurements made per TIA/EIA-603)

Selectivity (12dB SINAD)	0.25µV (Wide)/0.28µV (Narrow)
Selectivity	70dB (Wide)/60dB (Narrow)
Intermodulation Distortion	65dB (Wide)/60dB (Narrow)
Spurious Response	65dB
Audio Output (8Ω)	500mW with less than 10% distortion

Receiver (Measurements made per TIA/EIA-603)

RF Output Power	5W/1W
Spurious Response	65dB
Type of Emission	16K0F3E (Wide)/11K0F3E (Narrow)
FM Hum and Noise	45dB (Wide)/40dB (Narrow)
Audio Distortion	Less than 5%

Kenwood Corporation

2967-3, Ishikawa-machi, Hachioji-shi, Tokyo, 192-8525 Japan

Kenwood U.S.A. Corporation
P.O. BOX 22745, 2201 East Dominguez Street, Long Beach, CA 90801-5745, U.S.A.

Kenwood Electronics Canada Inc.
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

Kenwood Electronics Deutschland GmbH
Rembrücker Str. 15, 63150 Heusenstamm, Germany

Kenwood Electronics Belgium N.V.
Leuvensesteenweg 248 J, 1800 Vilvoorde, Belgium

Kenwood Electronics France S.A.
L'Etoile Paris Nord 2, 50 Allée des Impressionnistes, Bp 58416 Villepinte, 95944 Roissy Ch De Gaulle Cedex

Kenwood Electronics UK Limited
KENWOOD House, Dwight Road, Watford, Herts., WD18 9EB United Kingdom

Kenwood Electronics Europe B.V.
Amsterdamseweg 37, 1422 AC Uithoorn, The Netherlands

Kenwood Electronics Italia S.p.A.
Via G. Sirtori, 7/9 20129 Milano, Italy

Kenwood Ibérica, S.A.
Bolivia, 239-08020 Barcelona, Spain

Kenwood Electronics Australia Pty. Ltd.
(A.C.N. 001 499 074)
16 Giffnock Avenue, Centrecourt Estate, North Ryde, N.S.W. 2113 Australia

Kenwood Electronics (Hong Kong) Ltd.
Unit 3712-3724, Level 37, Tower one Metroplaza, 223 Hing Fong Road, Kwai Fong, N.T., Hong Kong

Kenwood Electronics Singapore Pte Ltd
1 Ang Mo Kio Street 63, Singapore 569110

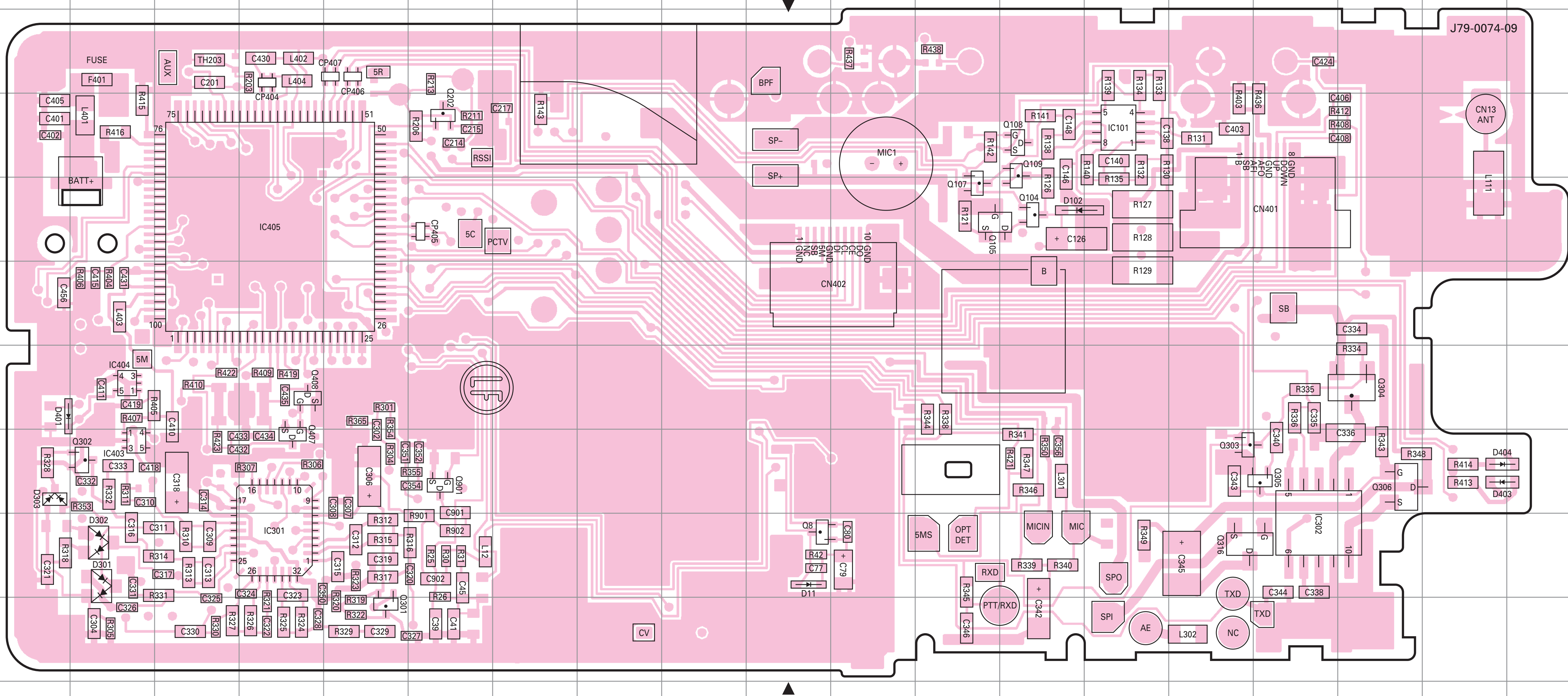
100%

TK-2212L PC BOARD

PC BOARD TK-2212L

TX-RX UNIT (X57-7120-11) Component side view (J79-0074-09)

TX-RX UNIT (X57-7120-11) Component side view (J79-0074-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC101	4N	Q105	5L	Q304	7Q	D102	5M
IC301	9D	Q107	5L	Q305	8P	D301	9B
IC302	9P	Q108	4M	Q306	8Q	D302	9B
IC403	8B	Q109	4M	Q316	9O	D303	8A
IC404	7B	Q202	4F	Q407	8D	D401	7A
IC405	5D	Q301	10E	Q408	7D	D403	8R
Q8	9J	Q302	8B	Q901	8F	D404	8R
Q104	5M	Q303	8O	D11	9J		

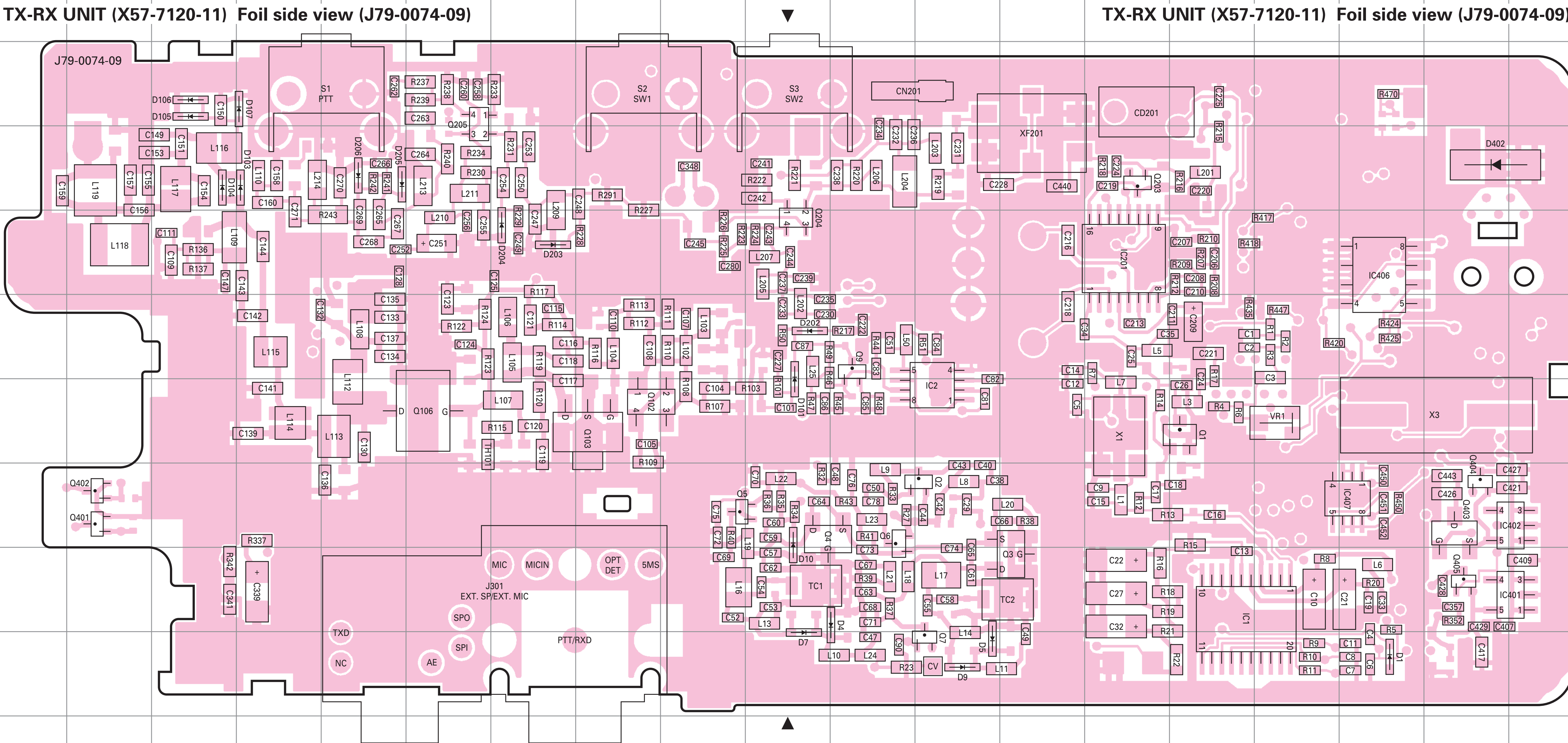
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TK-2212L PC BOARD

PC BOARD TK-2212L

TX-RX UNIT (X57-7120-11) Foil side view (J79-0074-09)

TX-RX UNIT (X57-7120-11) Foil side view (J79-0074-09)


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	9O	Q3	9M	Q203	4N	D4	9K	D106	3C
IC2	7L	Q4	8J	Q204	5J	D5	10L	D107	3D
IC201	5N	Q5	8I	Q205	3F	D7	10J	D202	6J
IC401	9S	Q6	8K	Q401	8B	D9	10L	D203	5G
IC402	8S	Q7	10L	Q402	8B	D10	8J	D204	5G
IC406	5Q	Q9	6K	Q403	8R	D101	7J	D205	4E
IC407	8Q	Q102	7H	Q404	8R	D103	4D	D206	4E
Q1	7O	Q103	7H	Q405	9R	D104	4C	D402	4R
Q2	8L	Q106	7F	D1	10Q	D105	3C		

Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TK-2212L SCHEMATIC DIAGRAM

Note : The components marked with a dot (●) are parts of layer 1.



BLOCK DIAGRAM

TK-2212L

BLOCK DIAGRAM

